User's Manual

ASM1317
ASM3852
ASM7487
ASM8796

Antenna System Monitor

Base Line 2.50d

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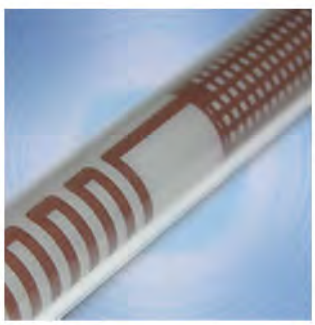

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Company Overview

RFI has been serving the needs of the wireless communications market for over 30 years. First founded as a manufacturer of antenna systems, RFI has grown to be a key player in the development, manufacturing and distribution of wireless technology and energy products. Through our extensive network of resellers, systems integrators and retail outlets, RFI is a key supplier to both industry and Government.

Our research and manufacturing facilities have talented people, sophisticated test equipment, state of the art software with class leading manufacturing systems and techniques. Additionally, we have in place a quality management program which is certified to ISO9001, environmental management system certification to ISO14001 and occupational health and safety standard AS4801 giving you complete confidence in everything we do.

RFI's products are truly innovative and as a result we are active around the globe taking our Australian designed and manufactured products to key markets in Asia Pacific, the Americas and EMEA regions via offices 'In-region' in addition to exporting directly to in excess of 50 countries.

One of RFI's key principals is to remain totally customer focused as we recognise our future depends on the success of our customers. We know that to be chosen as your supplier we must add value to your business and to achieve this we will work hard to deliver the best product when and where you need it and back this up with the very best technical support available.

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Disclaimer

Product part numbering in photographs and drawings is accurate at the time of printing. Part number labels on RFI products supersede part numbers given within this manual. Information is subject to change without notice.

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Note:

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions;

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

The user is cautioned that changes and/or modifications not approved by the responsible party could void the user's authority to operate the equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference in which case the user will be required to correct the interference at their own expense.

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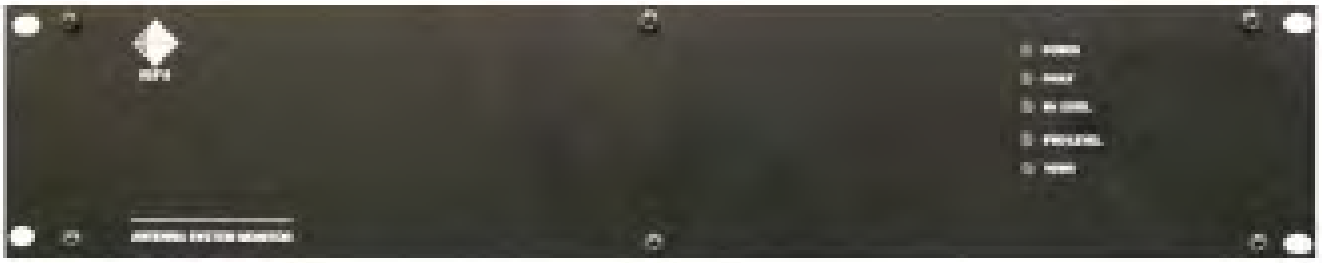
Telephone Intl	+1 (330) 486 0706	+61 7 3621 9400	+61 7 3621 9400
Telephone local	330 486 0706	1300 000 RFI	1300 000 RFI
Fax Intl	+ 1 (330) 486 0705	+61 2 9630 0844	+61 2 9630 0844
Web	rfiamericas.com	rfi.com.au	rfi.com.au

ASMxxxx Series

Front View



Rear View

ASMxxxxK1 Series

ASMxxxxK2 Series

SP1318-2440-DFF (132-174MHz)

Front View

Top View

SP3855-4440-DFF (380-520MHz)

Front View

Top View

SP7496-4440-DFF (746-960MHz)

Front View

Top View

CAM0000 Series

Channel Alarm Module (CAM) Front Panel Layout

Channel Alarm Module (CAM) Rear Panel Layout

SAM0000 Series

Site Alarm Module (SAM) Front Panel Layout

Site Alarm Module (SAM) Rear Panel Layout

1. General Description

The Antenna System Monitor (ASM) is used to measure and monitor channel-specific forward and reflected power between multiple transmitter combiners and an antenna for up to 80 channels. Rx Channel and/or adjacent site Tx Channel monitoring is also available for up to 80 channels, and the capability to perform a full Tx-to-Rx system isolation (loop back) test is also provided.

Four pairs of Forward (FWD) & Reverse (RFL) coaxial inputs fed from non-intrusive in-line directional couplers give the ASM the capability of monitoring the output of up to four transmitter combiner/antenna systems.

A Receive coaxial input port fed from either the receiver multicoupler system and/or an external "off-air" antenna gives the ASM the capability of monitoring receiver system signal levels, transmitter-to-receiver system isolation, or the propagation of transmitter channels located on other sites.

In addition to measuring and monitoring transmitter forward and reflected power in analogue and digital radio communication systems.

For each combiner/antenna system being monitored, a 4-port coupler is inserted after the transmitter combiner on the antenna feeder cable. These couplers have a low insertion loss (<0.2dB) and each is capable of handling up to 750Watts of RF power. The excellent PIM (<-150dBc) and PIP ratings of the coupler are maintained using 7/16 DIN (F) connectors on the input "From Combiner" and output "To Antenna" ports, with N (F) termination connectors used on the "FWD" and "RFL" coupling ports.

Designed for rack mounting, the ASM and the coupler units are intended for mounting into 19" rack mount equipment cabinets or open frames. As standard, the ASM is supplied with one coupler for connection to the first combiner/antenna system - with additional couplers available separately for applications requiring more than one combiner/antenna system to be monitored.

RFI can also supply PIM-rated 7/16 DIN right-angle adapters if required to assist in rack cabinet layout and installation of the coupler(s).

The ASM communicates via an Ethernet port mounted on the rear of the unit. This facilitates configuration and monitoring using a Graphical User Interface (GUI) via an integral web server. Access to the GUI is protected by a User Name and Password that is progressively checked for security strength.

The (up to) 80 individual Tx and Rx frequencies configured in the APM are divided across four GUI pages, each able to display up to 20 channels each. This allows the user to view a large number of channels on a standard monitor screen size without the excessive use of scrolling. It should be noted that each group of 20 Tx channels is not 'physically' assigned to a specific pair of FWD and RFL ports, despite the GUI presenting them as four sets of 20 channels each (although it may be considered this way if this assists in conveniently thinking of the channels and how they may be affiliated to the combiner/antenna that they are connected to). As Tx channels are not physically assigned to a specific pair of FWD and RFL ports, one frequency cannot be measured separately on multiple couplers (i.e. as may be desired if the multiple legs of a distributed antenna system were to be monitored using multiple couplers connected to one ASM) and therefore each individual frequency can only be measured "once" across all ports of the ASM.

All transmitter frequencies, channel bandwidths (12.5KHz and 25KHz), alarm level thresholds, and other relevant parameters are user-programmable via the GUI.

A DB15 rear mounted connector provides four (4) separate dry relay contact alarm reporting outputs which may be individually user-assigned, on an ad-hoc basis, to specific monitored channels or to the system alarms in the ASM. This capability allows specific channels' alarm conditions to be accessible via discrete alarm outputs – allowing faulty equipment to be individually identified, reported, and action to be initiated as required, or used to control basic alarm event actions such as antenna change-over (ACO) or main/standby base station switching. SNMP, SMTP (Email) and Manager Message UDP data packets are also available for alarm and status reporting. LED's on the front panel of the ASM allow visual confirmation of the hardwired alarm outputs.

The ASM models cover two DC voltage input power ranges, 9-36V and 36-60V. The AC mains voltage model uses a 100-240VAC to 12V DC power pack.

If desired, optional Channel Alarm Modules (CAMs) or Site Alarm Modules (SAMs) may be added to the ASM at any time. CAM/SAMs are connected using a daisy chained cabling approach using two cables - "DC power" and "Comms".

Any mixture of up to ten (10) Channel Alarm Modules (CAMs) or Site Alarm Modules (SAMs) may be added to a single ASM unit.

When connected, CAM/SAMs are automatically recognised by an ASM, and menu selections for them will then automatically appear in the ASM GUI. Each CAM/SAM has an "ID address" which is easily set via the rotary switch on the rear of each unit. Each CAM/SAM connected to an ASM should have a different ID address selected to prevent address contention in the ASM GUI.

Each CAM/SAM provides ten (10) separate alarm output relays which may be individually user-assigned, on an ad-hoc basis, to specific monitored channels alarms in the ASM. This capability allows specific channels' alarm conditions to be accessible via discrete alarm outputs – allowing faulty equipment to be individually identified, reported, and action to be initiated as required. SNMP, SMTP (Email) and Manager Message UDP data packets are also available for alarm and status reporting.

A digital logic input on each of the CAM/SAM's channels allows additional monitoring functionality – such as monitoring base station PTT lines – to enable the determination of "conditional" repeater RF output failure states. Various equipment operational configurations can be monitored using these digital logic inputs – such as hot/standby conditions (and the change-over actioned), using this functionality. Alternatively, these logic inputs may be configured as general purpose digital logic inputs.

In addition to these ten (10) separate digital logic inputs, each CAM/SAM also has four (4) user-programmable and configurable general-purpose digital logic inputs that may be used for monitoring external equipment – such as site or cabinet door opening, generator fuel level low, UPS, solar, or other alarm conditions. This functionality has been further enhanced in the SAM, with the input #1 being able to be configured to measure temperature, an analogue voltage range, or a digital logic input level - and inputs #2, #3 and #4 being able to be configured to measure an analogue voltage range or a digitial logic input level respectively.

The CAM and the SAM modules provide enhanced monitoring functionality for the ASM, allowing a range of PTT, temperature, voltages and digital inputs to be monitored as part of Antenna Change-Over (ACO), base station hot/standby, equipment and site monitoring, and auxilliary control capabilities.

2. Application Diagram

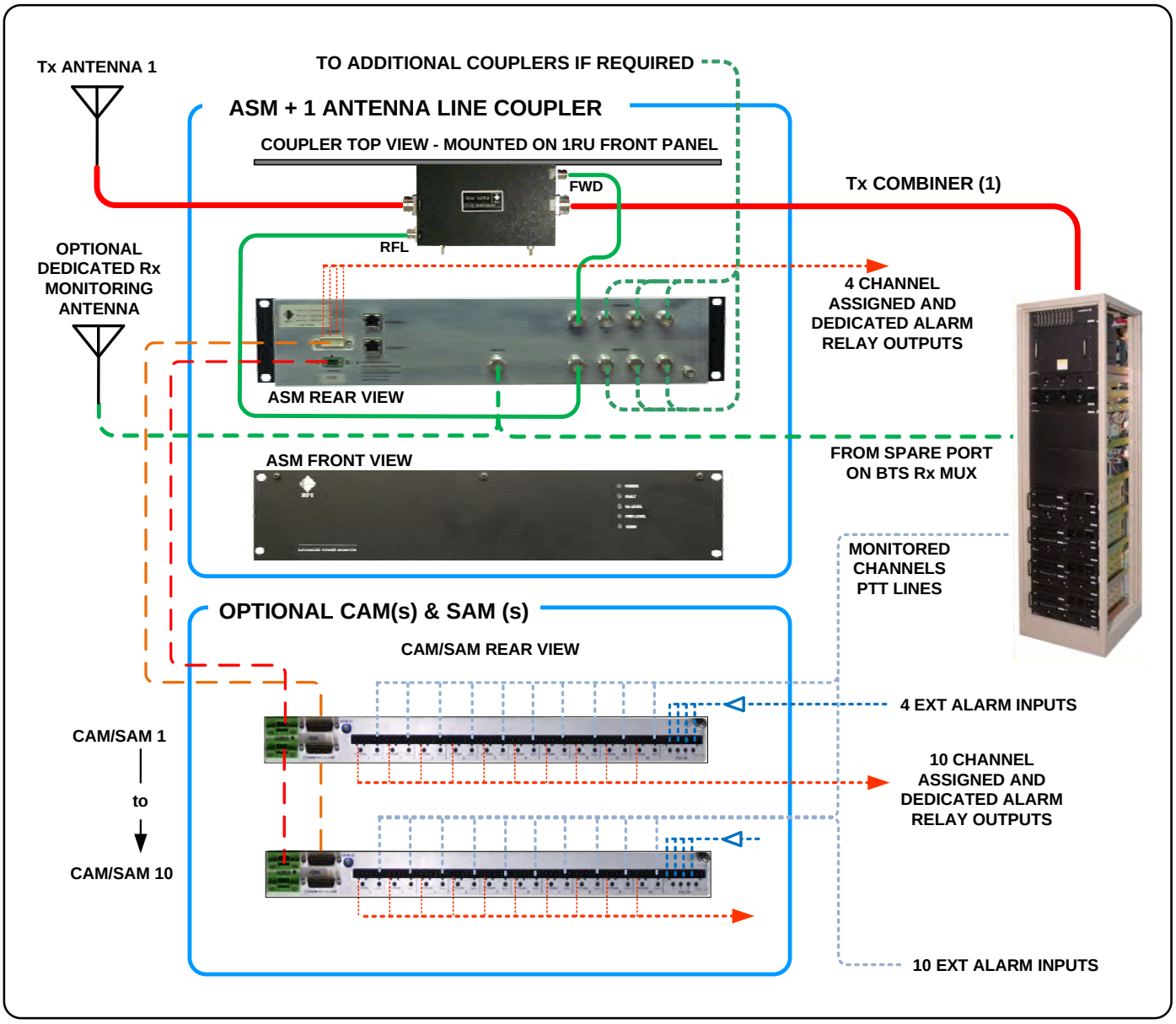

Tx ANTENNA 1
TO ADDITIONAL COUPLERS IF REQUIRED
ASM + 1 ANTENNA LINE COUPLER
COUPLER TOP VIEW - MOUNTED ON 1RU FRONT PANEL
FWD
RFL
Tx COMBINER (1)
OPTIONAL DEDICATED Rx MONITORING ANTENNA
4 CHANNEL ASSIGNED AND DEDICATED ALARM RELAY OUTPUTS
ASM REAR VIEW
ASM FRONT VIEW
FROM SPARE PORT ON BTS Rx MUX
MONITORED CHANNELS PTT LINES
OPTIONAL CAM(s) & SAM (s)
CAM/SAM REAR VIEW
4 EXT ALARM INPUTS
CAM/SAM 1
to
CAM/SAM 10
10 CHANNEL ASSIGNED AND DEDICATED ALARM RELAY OUTPUTS
10 EXT ALARM INPUTS

Diagram1

3. ASM - Electrical and Mechanical Specifications

ASM Model Number	ASMxxxx Series
Frequency range (Tx power and Rx level monitoring)	ASM1317 132-174MHz ASM3852 380-520MHz ASM7487 746-870MHz ASM8796 870-960MHz
Maximum number of monitored channels	Tx = 80 Rx = 80
Maximum number of Tx networks (Tx ant's)	4
Maximum number of Rx networks (Rx ant's)	1
Frequency channel step size	6.25kHz
Channel measurement bandwidths	12.5, and 25kHz
Max spurious or IM products level	-30dBm
Measurable Tx input power level	-50dBm to +20dBm (i.e. -10dBm to +60dBm into 40dB coupler)
Conducted emissions	Complies with CISPR22 Part B & FCC Part 15 (15.207)
Radiated emissions	Complies with CISPR22 Part B & FCC Part 15 (15.209)
RF Termination connectors	All N (F) on rear
Communication interface ports	2 x TCP/IP Ethernet port (RJ45) on rear
Internal alarm relay contacts output connector	1 x DB15 (M) on rear
Visual alarm notification	Front panel LED's
Configurable alarms	Summary Fault / Tx FWD min. and max. power VSWR max. / Rx RSSI min. & max. Tx-to-Rx Antenna Isolation min. & max.
Alarm Outputs	Summary Alarms: ASM Relay Outputs Detailed Alarms: ASM Relay Outputs (optional) CAM/SAM Module Relay Outputs SMTP Email (up to 4 Addresses) SNMPv2c (Northbound Traps) via Genesis Software GenWatch™ ASM Applet
Power supply options	9-36VDC, 36-60VDC, or 100-240VAC
Power consumption	10W (typical)
DC power connector	1 x Polarized 2-pin Phoenix connector on rear
Mounting	2RU 19" rack mounting
Dimensions	W 19 x H 3.5 x D 1.6in / W 483 x H 89 x D 40mm (including connectors)
Weight	< 4.4lbs / 2kgs
Operational temperature range	-30°C to +60°C / -22°F to 140°F

Table 1

4. Coupler - Electrical and Mechanical Specifications

Coupler Model Number	SPxxxx-2440-DIN / SPxxxx-4440-DIN
Frequency range	SP1318-2440-DFF 130-180MHz SP3855-4440-DFF 380-550MHz SP7496-4440-DFF 746-960MHz
Insertion Loss	< 0.2dB
Input and Output Port Return Loss	> 20dB
Coupling Loss	40dB (+/- 0.7)
Maximum input power	750W
Maximum PIP	16kW (+72dBm)
PIM 3rd OIP (2 x 43dBm carriers)	>150dBc
Connectors – "To ANT" & "From COMBINER" ports	2 x 7/16 DIN (F)
Connectors – "FWD" and "RFL" coupling ports	2 x N (F)
Mounting	1RU 19" rack mounting
Dimensions	W 19 x H 1.75 x D 3" / W 483 x H 45 x D 77mm (including connectors)
Weight	SP1318-2440-DFF < 4.4lbs / 2kgs SP3855-4440-DFF < 2.2lbs / 1kg SP7496-4440-DFF < 2.2lbs / 1kg
Operational temperature range	-30°C to +60°C / -22°F to 140°F

Table 2

5. CAM/SAM - Electrical and Mechanical Specifications

CAM Model Number	CAM0000 CAM0000-48
Alarm Outputs	10
Alarm Contact Type	Dry Relay N.O./Common/N.C.
Alarm Inputs	10 (configurable – digital – general purpose/one per alarm output) 4 (configurable – digital - general purpose)
Alarm Input Logic	digital "0" = <2.5V DC "1" = >2.5V DC
Visual alarm notification	Front and Rear panel mounted LEDs
Power Supply options	9-36VDC (CAM0000) or 36-60VDC (CAM0000-48)
Power Consumption	10W (max)
Connectors External Alarm Inputs Channel Alarms Outputs Channel Alarms Inputs Power Supply Comms Interface to/from ASM	(Note: All connectors on rear) 1 x Polarized 8-pin Phoenix connector 10 x Polarized 3-pin Phoenix connectors 10 x Polarized 2-pin Phoenix connectors 1 x Polarized 2-pin Phoenix connector 1 x DB15 (M)
Mounting	1RU 19" rack mounting
Dimensions	W 19 x H 1.75 x D 3" / W 483 x H 45 x D 77mm
Weight	< 2.2lbs / 1kg
Operational temperature range	-30°C to +60°C / -22°F to 140°F

Table 3

SAM Model Number	SAM0000 SAM0000-48
Alarm Outputs	10
Alarm Contact Type	Dry Relay N.O./Common/N.C.
Alarm Inputs	10 (configurable) digital (general purpose/one per alarm output) 4 (configurable) temperature/analogue/digital (general purpose)
Alarm Input Logic	temperature RFI temperature sensor analogue -60V DC to +60V DC analogue -60V DC to +5V DC digital "0" = <2.5V DC "1" = >2.5V DC (+5VDC max.)
Temperature Sensor (optional)	SAM0000-TS (ordered separately)
Visual alarm notification	Front and Rear panel mounted LEDs
Power Supply options	9-36VDC (SAM0000) or 36-60VDC (SAM0000-48)
Power Consumption	10W (max)
Connectors External Alarm Inputs Channel Alarms Outputs Channel Alarms Inputs Power Supply Comms Interface to/from ASM	(Note: All connectors on rear) 1 x Polarized 8-pin Phoenix connector 10 x Polarized 3-pin Phoenix connectors 10 x Polarized 2-pin Phoenix connectors 1 x Polarized 2-pin Phoenix connector 1 x DB15 (M)
Mounting	1RU 19" rack mounting
Dimensions	W 19 x H 1.75 x D 3" / W 483 x H 45 x D 77mm
Weight	< 2.2lbs / 1kg
Operational temperature range	-30°C to +60°C / -22°F to 140°F

Table 4

6. Ordering Information

Ordering Information	
Model Number	**Description**
ASM1317	Antenna System Monitor 132-174MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 9-36V DC
ASM1317-48	Antenna System Monitor 132-174MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 36-60V DC
ASM1317-AC	Antenna System Monitor 132-174MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 100-240V AC (external)
ASM3852	Antenna System Monitor 380-520MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 9-36V DC
ASM3852-48	Antenna System Monitor 380-520MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 36-60V DC
ASM3852-AC	Antenna System Monitor 380-520MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 100-240V AC (external)
ASM7487	Antenna System Monitor 746-870MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 9-36V DC
ASM7487-48	Antenna System Monitor 746-870MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 36-60V DC
ASM7487-AC	Antenna System Monitor 746-870MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 100-240V AC (external)
ASM8796	Antenna System Monitor 870-960MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 9-36V DC
ASM8796-48	Antenna System Monitor 870-960MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 36-60V DC
ASM8796-AC	Antenna System Monitor 870-960MHz 80 Ch / 4 Tx Fwd / 4 Tx Rfl / 1 Rx Port / 100-240V AC (external)
Additional Couplers	**Description**
SP1318-2440-DFF	Directional Coupler 130-180MHz 40dB 4-Port 19in Rack Mount 1RU Input /Output Ports DIN (F) Coupling Ports N (F)
SP3855-4440-DFF	Dual Directional Coupler 380-550MHz 40dB 4-Port 19in Rack Mount 1RU Input /Output Ports DIN (F) Coupling Ports N (F)
SP7496-4440-DFF	Dual Directional Coupler 746-960MHz 40dB 4-Port 19in Rack Mount 1RU Input /Output Ports DIN (F) Coupling Ports N (F)
Alarm Modules	**Description**
CAM0000	Channel Alarm Module 9-36V DC
CAM0000-48	Channel Alarm Module 36-60V DC
SAM0000	Site Alarm Module 9-36V DC
SAM0000-48	Site Alarm Module 36-60V DC
SAM0000-TS	Site Alarm Module Temperature Sensor

Table 5

7. Unpacking

The ASM (and optional CAM/SAM) is packed into a custom designed cardboard insert, box container and sleeve together with a single banded Coupler and AC to DC power pack if the AC option has been ordered.

Packed with the ASM and Coupler will be the Factory Test Sheet (FTS) and Quick Start Guide (QSG). The User's Manual will have been loaded onto either a CD or USB memory stick packed together with the QSG. It is recommended to retain the Factory Test Sheet for future reference.

An Ethernet jumper cable is included in the packaging, provided for your convenience to connect and configure the ASM via an onboard Graphical User Interface (GUI) from the browser located on your laptop/notebook.

Although the packing box has been designed to provide a significant amount of protection, it is important to report any visible damage to the carrier immediately. It is the customers' responsibility in the event of product damage, to lodge a damage claim with the carrier within a short period of time after receipt of the package. The time window for lodging the claim should be ascertained from the specific carrier as this may vary between carriers (typically 1 to 5 days).

Please dispose of the packing material responsibly.

8. Firmware License Agreement

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9. Installation

The ASM, (optional) CAM/SAMs, and Coupler are designed to be mounted into a standard EIA 19" rack frame using industry standard 19" rack fasteners. The Application Diagram (Diagram 1) illustrates the ASM/CAM/SAM/Coupler connectivity.

The system should be installed into a dry, vibration and corrosive free environment avoiding areas of high heat or humidity and direct sunlight.

The Coupler 1RU panel/s may be mounted either above or below the ASM. However consideration should be given to the requirement for the low loss cables from the Tx combiners to be routed via the Coupler panel to the antenna. This may influence the mounting position of the Coupler panel in the respective 19" rack frame.

No RF coaxial interconnect cables are provided with the ASM. This is because the optimal length for these cables may vary for each installation. These cables should be made up on site once the ASM and respective coupler units have been mounted into the 19" rack frame.

Typically 50 Ohm double-shielded or solid jacket coaxial cables terminated with N (M) connectors terminated on each end are used to connect the "FWD" and "RFL" ports of the Coupler to the nominated input ports of the ASM. Although there is no specific restriction on the length of these cables between the Coupler and the ASM, it is recommended to keep the cable losses below 3dB, which in effect adds to the coupling loss. This loss can be calibrated out, however the end result of high cabling losses in these cables will be to marginally reduce the effective lower level measurement dynamic range of the ASM. Lower loss coaxial cables should be used to reduce this effect when using longer cable runs exceeding a calculated coaxial line loss of 3dB.

The input "From Combiner" and output "To Antenna" ports of the Coupler are 7/16DIN (F) and will require low Inter-Modulation (IM) 7/16DIN (M) cable connectors to terminate onto the Coupler. The use of correct cable cutting and connector preparation tools to terminate the 7/16DIN (M) connectors is strongly recommended to reduce the possibility of Passive Inter-Modulation (PIM) products. The 7/16DIN connectors should always be correctly torqued to the manufacturers recommended values.

NOTE: Final torqueing of the termination connectors onto the Coupler should be done after the calibration procedure as described under the *Calibration – Tx Port 1* section of this document is completed.

To protect the transmitter combiner and transmitters from any possible damage, ensure that each transmitter coupled to the respective transmitter combiner is powered down prior to disconnection and reconnection onto the respective coupler units.

Although it is not necessary to terminate the unused Tx FWD, Tx RFL and Rx ports on the ASM with a 50 Ohm low power resistive termination load, it is often considered good RF engineering practice to terminate any spare or unused port.

For DC power supply, a cable from the DC source should be terminated into the supplied 2-pin plug, observing the correct polarity, and then plugged into the polarized 2-pin Phoenix (F) socket on the rear of the ASM. For AC Mains versions, an AC-to-DC plug pack is provided with a terminated 2-Pin plug already terminated onto the end of the plug pack's DC cable. This should be fitted into the power socket on the rear of the ASM.

M5 and M6 earth studs are located on the rear of the ASM, (optional) CAM/SAMs, and Coupler for earthing the units to a suitable earthing point within the 19" rack cabinet or rack frame.

10. Operation

When the power source to the ASM has been switched on, check that the green "Power" LED light on the front panel is illuminated. Any other illuminated LEDs will be reflecting the current state of the various alarms - based on the current programmed configuration.

If one or more optional Channel Alarm Modules (CAMs) and/or Site Alarm Modules (SAMs) are fitted, the green "Power" LED light on their front panel is illuminated. This LED will "pulse" at regular intervals to indicate comms activity between them and the host ASM. Any other illuminated LEDs will be reflecting the current state of the various inputs/outputs - based on the current programmed configuration.

A CD or USB memory stick is provided with the ASM and contains copies of the QSG (Quick Start Guide), Service Bulletins, SNMP MIB files and ASM User's Manual

In addition to using the integral Web Browser GUI, the ASM (and any connected CAM/SAMs) can also be communicated with via the CLI (Command Line Interface) using plain text format via a Telnet IP session. For information on the CLI format please contact the RFI Technical Support team.

10.1 Ethernet Connection, Set-up, and Reset

Web Browser GUI (Graphical User Interface)

The ASM utilizes an on board web server to provide web browser access to the GUI. This can be accessed connecting to the ASM via a short Ethernet cable jumper from a computer/tablet directly to the ASM or remotely via a TCP/IP network.

A standard Ethernet CAT5e jumper cable terminated with RJ45 connectors at either end is provided for convenience in the packing box with the ASM. Plug one end of this Ethernet jumper cable into the ASM and the other end into your computer Ethernet socket.

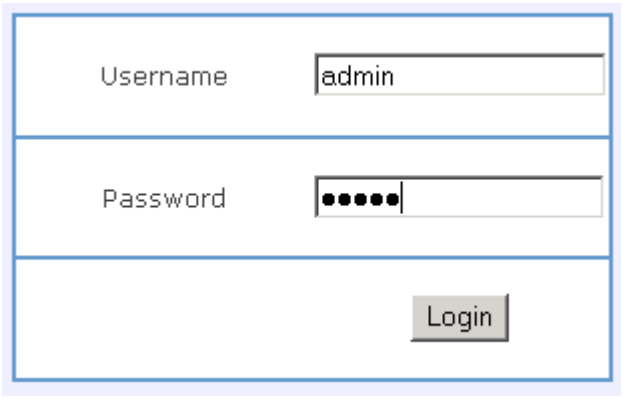
The following web browsers are compatible with the ASM GUI;

- Internet Explorer 8
- Firefox V3.6
- Chrome V9
- Safari V5.

IP Address

Initiate your web browser and type in the address field the following default address; http://192.168.1.200 (ASM factory default address).

Connectivity to the ASM is successful when the following "Log In" page appears.



Should the web browser be unable to open this session, it may be necessary to set the IP address of your computer to an address in the same IP range (i.e. 192.168.1.180).

This is done for example in Windows XP™ in the following manner;

1. Select "Start" from status menu
2. Single click – "Control Panel"
3. Double click – " Network Connections"
4. Double click - "Local Area Connection"
5. In Local Area Connections Status box, single click the "Properties" button.
6. When the Local Area Connection Properties box opens, select only the "Internet Protocol (TCP/IP)" choice.
7. Click "Properties" button.
8. Click "Use the following IP address.
9. Enter next to *IP address* 192.168.1.180
10. Enter next to *Subnet mask* 255.255.255.0
11. Enter next to *Default gateway* 192.168.1.254
12. Click "OK" to initiate changes.

This is done for example in Windows 7™ in the following manner;

1. Select "Start" from status menu
2. Single click – "Control Panel"
3. Single click – " Network and Sharing Center"
4. Single click - "Change Adapter Settings" on the left hand side menu
5. Single Click – "Local Area Connection" box
6. Single Click – "Change Settings of this Connection"
6. When the Local Area Connection Properties box opens, select only the "Internet Protocol 4 (TCP/IPv4)" choice.
7. Click "Properties" button.
8. Click "Use the following IP address".
9. Enter next to *IP address* 192.168.1.180
10. Enter next to *Subnet mask* 255.255.255.0
11. Enter next to *Default gateway* 192.168.1.254
12. Click "OK" to initiate changes.

Should you still be unable to successfully connect to the ASM via the default IP address then the IP address may have already been changed. If there is no possibility of recovering the changed IP address, then it will be necessary to reset the ASM to the factory default settings.

Reset Factory Default Ethernet Addresses and Access.

To reset the ASM back to the Factory Default settings will mean a complete reset of all RF configuration settings and alarm threshold parameters as well as the IP address parameters. To do this, simply switch the ASM off by removing the DC power cable connector. Press the factory reset button on the rear of the ASM, reconnect the DC power while continuing to hold the reset button down until the green power LED light flashes, the Factory reset has started and the reset button may be released. Wait for the ASM to complete its default re-configuration and to restart.

NOTE: This will cause the IP address, subnet and gateway addresses and all other configuration data to be reset back to factory default address.

Factory Default Ethernet and Access settings

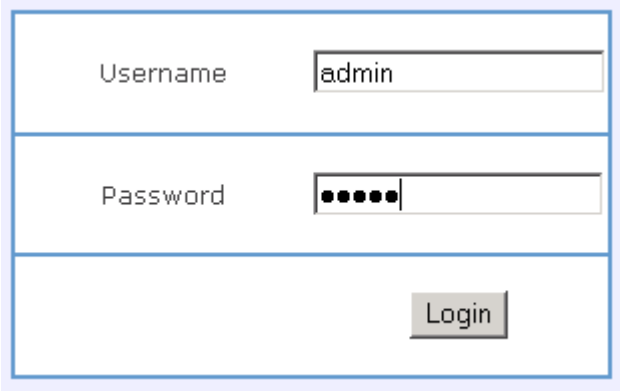
DHCP - Disabled
IP Address - 192.168.1.200
Subnet Mask - 255.255.255.0
Gateway - 192.168.1.254
Level 1 User Name: user
Level 1 Password: user
Level 2 User Name: admin
Level 2 Password: admin

Reset RF Default settings.

To reset the ASM back to the RF Default settings will mean a complete reset of all RF configuration settings and alarm threshold parameters. The above Factory Default Ethernet and Access settings will remain unchanged.

Should you wish to only reset the RF configuration settings, simply press the factory reset button (without disrupting power) until the green power LED light flashes, the RF reset has started and the reset button may be released.

10.2 Log In Page



The default User Name is "admin" and Password is "admin". This default user name and password provides complete and unrestricted access to the ASM (level 2). Once logged in, this can be changed via the *Maintenance – Access Management* screen.

User Name and Password Levels

Level 1: User name and password access via the web browser GUI interface displays only status screens.

Level 2: User name and password access via the web browser GUI interface facilitates status, configure and maintenance screens.

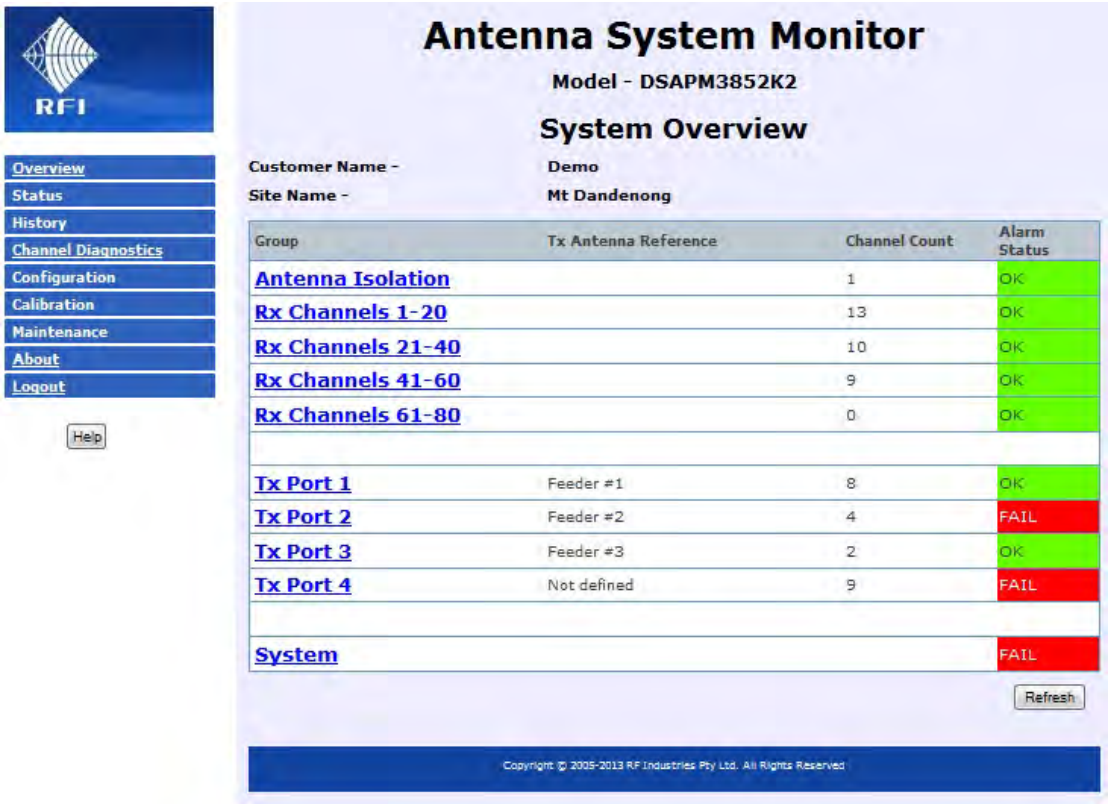
Once the correct User Name and Password is entered the GUI will open to the first page of the GUI.

GUI Page headers

The first page that appears in the GUI is the "System Overview" page.

This page is headed with the name of the product and the model reference. The "Customer Name" and "Site Name" will display either the factory default fields (as "Not Defined") or the names allocated to each under the "*Configuration – User Data*" screen which allows the user to define the customer name, respective site name, and the names allocated to the respective Tx Ports (or Antennas) 1 to 4.

10.3 System Overview



This page displays an overview of the units status.

For the System, the overall summary alarm status is displayed, for each Port, the following items are displayed:

Group:

The group of parameters relevant to each title.

Tx Antenna Reference:

The user-defined description for the Port.

Channel Count:

The number of channels that have been configured for the Port.

Alarm Status:

The "Fail" or "OK" summary status for the Group.

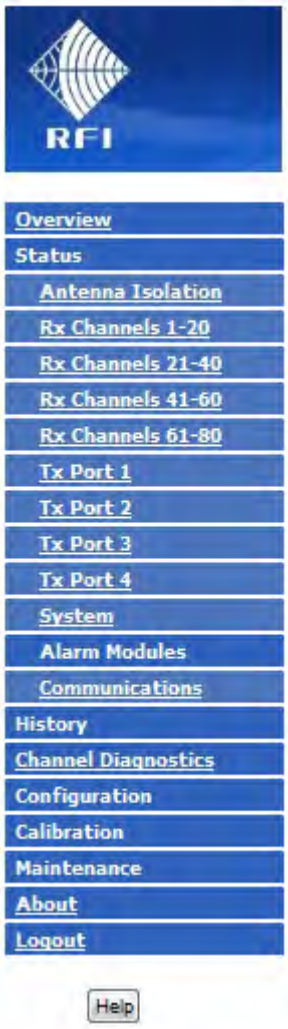
The "Refresh" button reloads the page, updating the status information.

Clicking the title of a "Group" will navigate to the nominated port's details page.

10.4 Status Menu

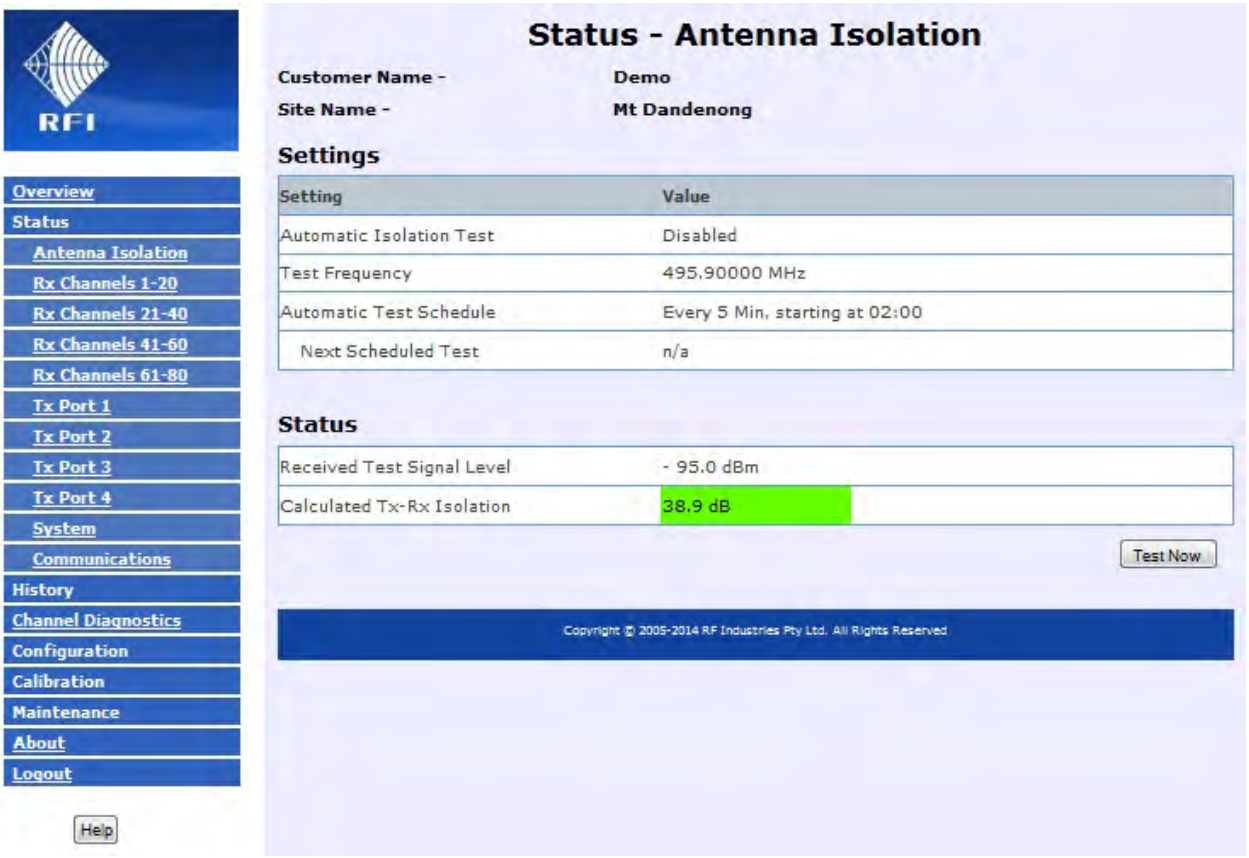
The "Status" menu allows all of the ASMs measurement parameters to be viewed.

Selecting each indented topic under "Status" will display that item as a separate display page.



Note: The "*Status - Channel Alarm Modules*" and "*Status – Site Alarm Modules*" menu items appear only if one or more (optional) Channel Alarm Module (CAM) or Site Alarm Module (SAM) are installed. Up to ten (10) CAM/SAM units may be fitted to each ASM as required.

10.5 Status - Antenna Isolation



The Antenna Isolation "Status" page reports the current status of the Antenna Isolation settings.

Automatic Isolation Test:

Indicates if the Antenna Isolation Test function is currently enabled/disabled in the ASM.

Test Frequency:

The frequency upon which the Antenna Isolation Test will be performed.

Note: Depending on local licensing and regulatory requirements this frequency will normally be one of the sites existing Base Station receive frequencies.

Automatic Test Repetition Period:

The regularity that the Antenna Isolation Test will be performed.

Next Scheduled Test:

The time/date of the next scheduled Antenna Isolation Test.

Received Test Signal Level

The measured level of the Antenna Isolation test signal at the ASM Receive port.

Calculated Tx-Rx Isolation:

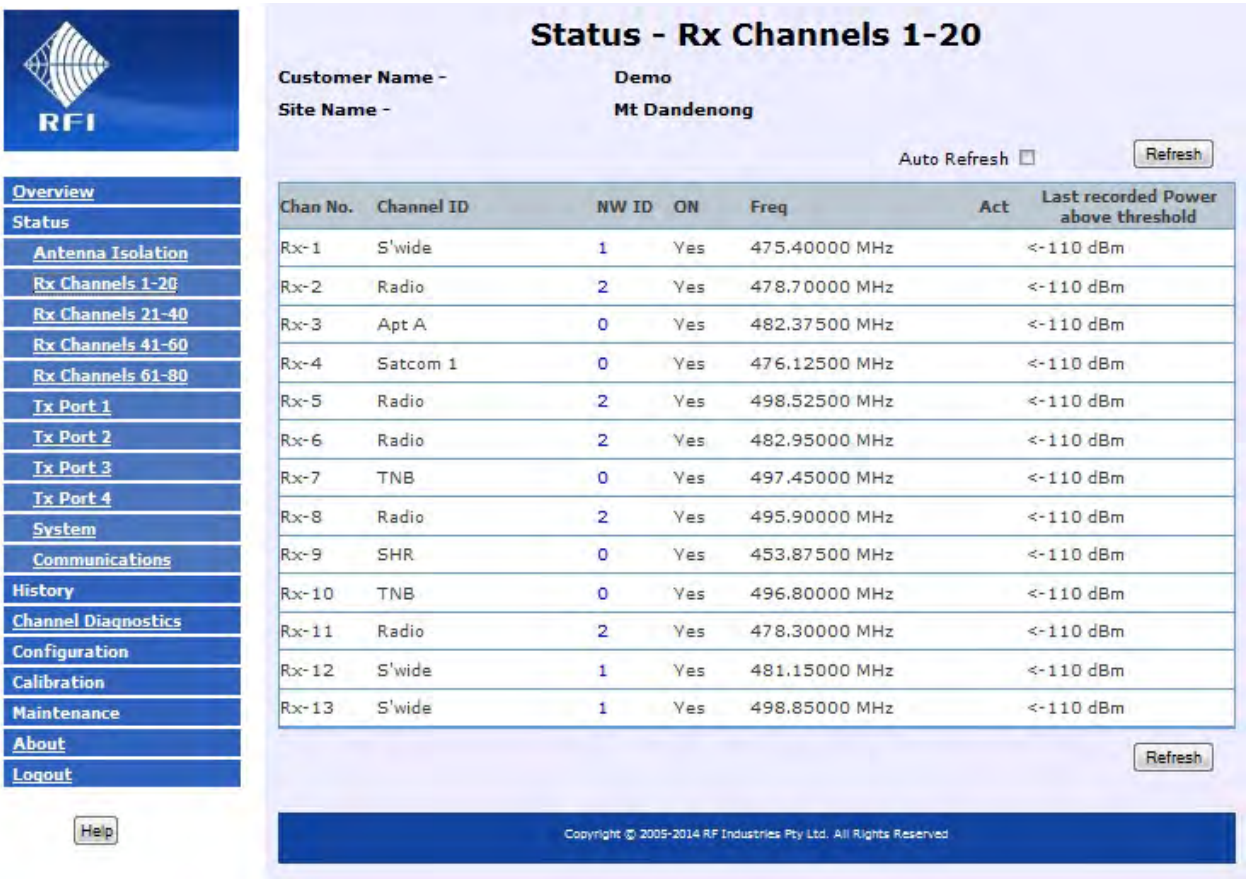
The calculated Tx-Rx antenna isolation value based on various parameters configured into the ASM (i.e. Coupler coupling values, Tx Feeder Loss, Rx System Gain, etc).

Test Now:

The "Test Now" button can be selected at any time to manually initiate a measurement.

Note: The maximum isolation value that can be measured will be a function of the test frequency's level, coupler and receiver system values, and the ASM unit's Rx Level sensitivity.

10.6 Status - Rx Channels 1-20


Status - Rx Channels 1-20
Customer Name - Demo
Site Name - Mt Dandenong
Auto Refresh
Refresh
Overview
Status
Antenna Isolation
Rx Channels 1-20
Rx Channels 21-40
Rx Channels 41-60
Rx Channels 61-80
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
System
Communications
History
Channel Diagnostics
Configuration
Calibration
Maintenance
About
Logout
Help
Chan No. Channel ID NW ID ON Freq Act Last recorded Power above threshold
Rx-1 S'wide 1 Yes 475.40000 MHz <-110 dBm
Rx-2 Radio 2 Yes 478.70000 MHz <-110 dBm
Rx-3 Apt A 0 Yes 482.37500 MHz <-110 dBm
Rx-4 Satcom 1 0 Yes 476.12500 MHz <-110 dBm
Rx-5 Radio 2 Yes 498.52500 MHz <-110 dBm
Rx-6 Radio 2 Yes 482.95000 MHz <-110 dBm
Rx-7 TNB 0 Yes 497.45000 MHz <-110 dBm
Rx-8 Radio 2 Yes 495.90000 MHz <-110 dBm
Rx-9 SHR 0 Yes 453.87500 MHz <-110 dBm
Rx-10 TNB 0 Yes 496.80000 MHz <-110 dBm
Rx-11 Radio 2 Yes 478.30000 MHz <-110 dBm
Rx-12 S'wide 1 Yes 481.15000 MHz <-110 dBm
Rx-13 S'wide 1 Yes 498.85000 MHz <-110 dBm
Refresh
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The Rx Port "Status" page reports the current status of all Rx channels. To prevent display clutter, Rx channels are displayed with 20 channels per page.

Chan No:

Indicates the configured sequential channel number.

Channel ID:

The user configured description for the channel.

NW ID:

Allows channels to be affiliated with a network (i.e. "1" is Police Network, "2" is Fire Network), to an antenna system ("1" is Tx Antenna #1, "2" is Tx Antenna #2), or to another label (i.e. "1" is 24x7 Maintenance, "2" is Normal Hours Maintenance) and this label will appear in Alarm Messages to allow faster determination of response priority and or actions.

Note: The NW ID column is only displayed if this feature is enabled in the *Configuration – User Data* screen.

ON:

The configured channel scanning On/Off status. If this is "OFF", the measurements for this channel will not be performed. This field may be used if channels have been disabled or temporarily removed from the site.

Freq:

The configured frequency of the channel.

Power:

The result of the last valid received signal power level measurement in dBm. This will only be updated if the measured Rx power is above the programmed minimum threshold level.

Act:

An "active" indicator that shows the status of the *Last recorded Power above threshold* value being display.

The three states that may appear are;

1. The indicator symbol is displayed but is dull – the value shown was not measured in the last measurement cycle.
2. The indicator symbol is displayed and is lit – the value shown was measured in the last measurement cycle.
3. The indicator symbol is not displayed – the channel is currently disabled and is not being measured.

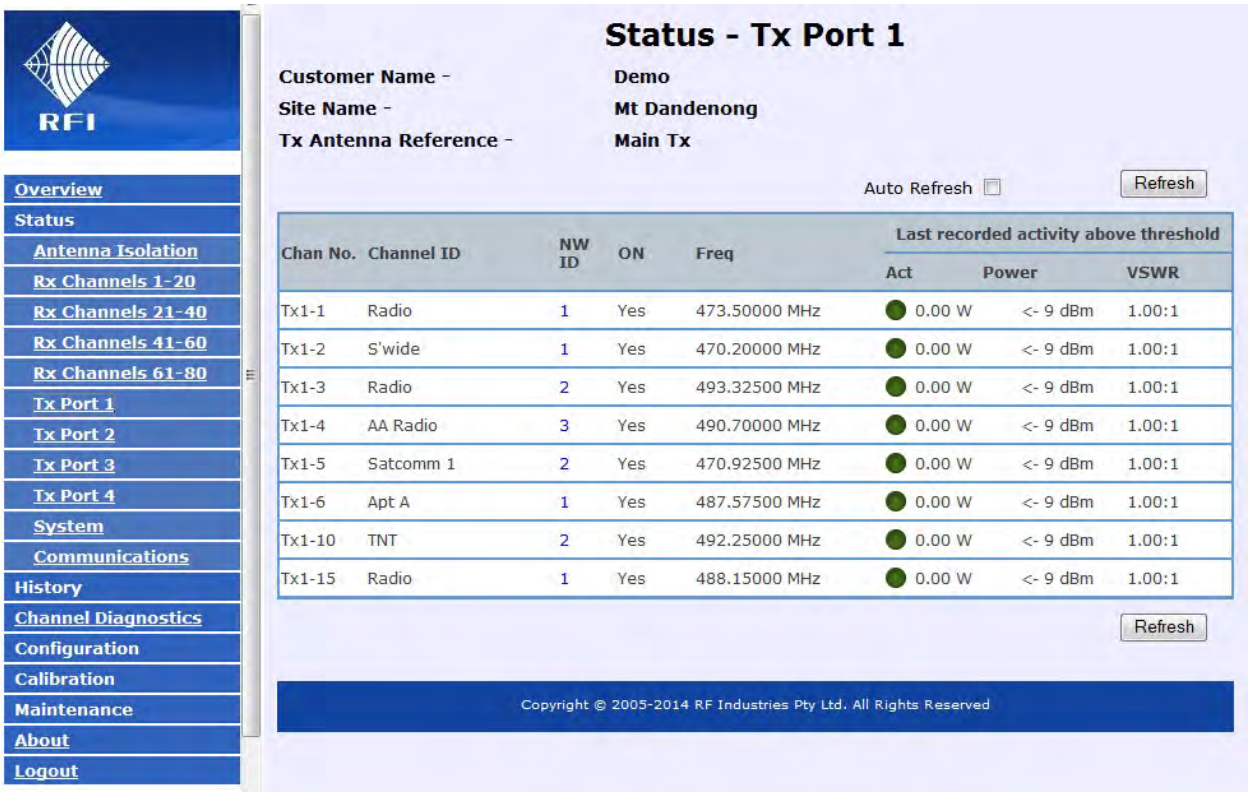
Auto Refresh:

Check this box to enable continuously repeated measurement and status updates. Updates will refresh every 5 seconds. Uncheck this box to cease continuously repeated updates.

Refresh:

Click this button to manually trigger one measurement and status update cycle.

10.7 Status – Tx Port 1


Status - Tx Port 1
Customer Name - Demo
Site Name - Mt Dandenong
Tx Antenna Reference - Main Tx
Auto Refresh
Refresh
Overview
Status
Antenna Isolation
Rx Channels 1-20
Rx Channels 21-40
Rx Channels 41-60
Rx Channels 61-80
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
System
Communications
History
Channel Diagnostics
Configuration
Calibration
Maintenance
About
Logout
Chan No. Channel ID NW ID ON Freq Last recorded activity above threshold Act Power VSWR
Tx1-1 Radio 1 Yes 473.50000 MHz 0.00 W <- 9 dBm 1.00:1
Tx1-2 S'wide 1 Yes 470.20000 MHz 0.00 W <- 9 dBm 1.00:1
Tx1-3 Radio 2 Yes 493.32500 MHz 0.00 W <- 9 dBm 1.00:1
Tx1-4 AA Radio 3 Yes 490.70000 MHz 0.00 W <- 9 dBm 1.00:1
Tx1-5 Satcomm 1 2 Yes 470.92500 MHz 0.00 W <- 9 dBm 1.00:1
Tx1-6 Apt A 1 Yes 487.57500 MHz 0.00 W <- 9 dBm 1.00:1
Tx1-10 TNT 2 Yes 492.25000 MHz 0.00 W <- 9 dBm 1.00:1
Tx1-15 Radio 1 Yes 488.15000 MHz 0.00 W <- 9 dBm 1.00:1
Refresh
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The Tx Port "Status" page reports the current status of all Tx channels allocated to the selected Tx Port.

Note: The Status - Tx Port screens have been optimised for accuracy. The Channel Diagnostics page has been optimised for fast screen refresh rate to assist tuning and other maintenance activities. As such, for some modulation types, the Power values displayed on the Status – Tx Port pages may vary slightly from those displayed on the Channel Diagnostics screen. For highest accuracy, use the Status - Tx Ports screens for determining actual Power values.

Chan No:

Indicates the Tx Group followed by the configured sequential channel number within the Group i.e. Tx1-3 is the 3rd monitored channel within Tx Group 1.

Channel ID:

The user configured description for the channel.

NW ID:

Allows channels to be affiliated with a network (i.e. "1" is Police Network, "2" is Fire Network), to an antenna system ("1" is Tx Antenna #1, "2" is Tx Antenna #2), or to another label (i.e. "1" is 24x7 Maintenance, "2" is Normal Hours Maintenance) and this label will appear in Alarm Messages to allow faster determination of response priority and or actions.

Note: The NW ID column is only displayed if this feature is enabled in the *Configuration – User Data* screen.

ON:

The configured channel scanning On/Off status. If this is "OFF"**,** the measurements for this channel will not be performed. This field may be used if channels have been disabled or temporarily removed from the site.

Freq:

The configured frequency of the channel.

Act:

An "active" indicator that shows the status of the *Last recorded power above threshold* value being display.

The three states that may appear are;

1. The indicator symbol is displayed but is dull – the value shown was not measured in the last measurement cycle.
2. The indicator symbol is displayed and is lit – the value shown was measured in the last measurement cycle.
3. The indicator symbol is not displayed – the channel is currently disabled and is not being measured.

Power:

The result of the last valid signal power level measurement in Watts and dBm. This will only be updated if the Tx power is above the programmed minimum threshold level.

VSWR:

This is the VSWR recorded when the last valid power level measurement occurred.

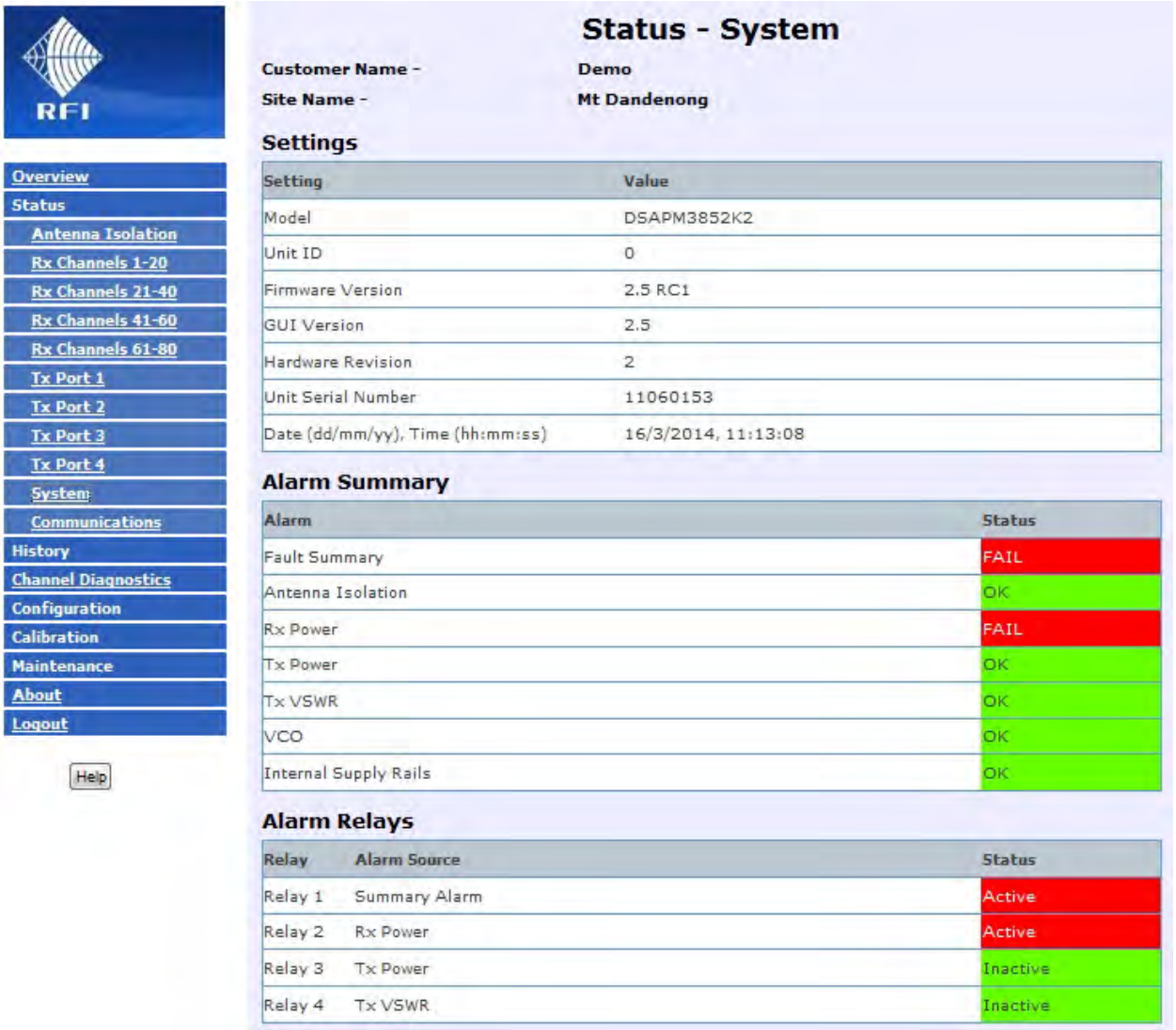
Auto Refresh:

Check this box to enable continuously repeated measurement and status updates. Updates will refresh every 5 seconds. Uncheck this box to cease continuous updates.

Refresh:

Click this button to manually trigger one measurement and status update cycle.

10.8 Status – System



This System Status" page reports the current system settings and alarm summary**.**

Model:

The model designator of this unit.

Unit ID:

This field reports the unique ID number that has been assigned by the remote Manager application (If being used). If the unit is not managed through the Manager application, this will normally be 0.

Firmware version:

The version of the firmware.

Hardware Revision:

The hardware revision status of the unit. Future hardware revision levels may add additional capabilities.

Unit Serial Number:

The serial number of this unit.

Date, Time:

The date and time as maintained by the on-board real time clock. Refreshing the page will update this information.

Alarm Summary:

Fault Summary:

This is the overall system alarm summary status. It will be active if any of the alarms below it are active.

Antenna Isolation:

This alarm will activate if the Antenna Isolation test calculates an isolation value outside the min. or max. value entered.

Rx Power:

This alarm will activate if any of the Rx channels are detecting a received signal level outside the programmed min/max threshold levels.

Tx Power:

This alarm will activate if any of the Tx channels are detecting a forward power level outside the programmed min/max threshold levels.

Tx VSWR:

This alarm will activate if any of the Tx channels is detecting a VSWR level above its configured max VSWR level.

VCO:

If any of the unit's VCOs is experiencing lock failures, this alarm will activate.

Internal Supply Rails:

If any of the unit's internal supply rail voltages goes out of limits, this alarm will activate.

Alarm Module External Alarms:

If any CAM or SAM units' External Inputs has an alarm state present, this alarm will activate.

Note: This line appears only if one or more (optional) Channel Alarm Module (CAM) or Site Alarm Module (SAM) is installed. Up to ten (10) CAM/SAM units may be fitted to each ASM as required.

Alarm Relays:

Relay 1:

Displays the Alarm Source currently allocated to this relay output, and its status.

Relay 2:

Displays the Alarm Source currently allocated to this relay output, and its status.

Relay 3:

Displays the Alarm Source currently allocated to this relay output, and its status.

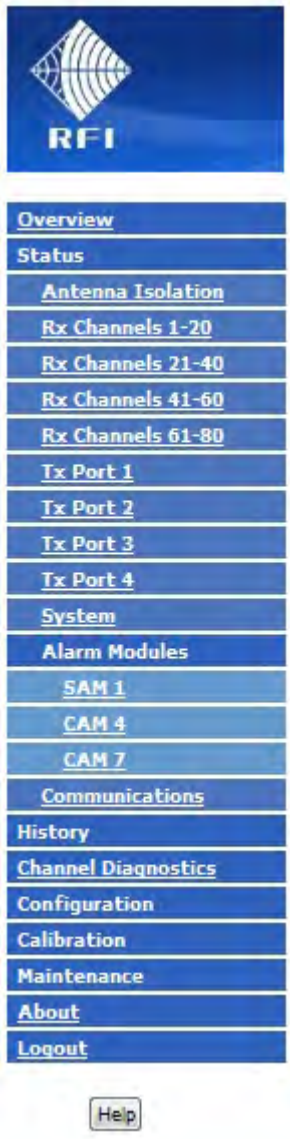
Relay 4:

Displays the Alarm Source currently allocated to this relay output, and its status.

Refresh:

Reloads the page, updating the status information.

10.9 Status – Alarm Modules - Menu



Note: The "*Status - Alarm Modules*" menu items appear only if one or more (optional) Channel Alarm Module (CAM) or Site Alarm Module (SAM) are installed. Up to ten (10) CAM/SAM units may be fitted to each ASM as required.

10.10 Status – Alarm Modules - CAM

RFI

- Overview
- Status
  - Antenna Isolation
  - Rx Channels 1-20
  - Rx Channels 21-40
  - Rx Channels 41-60
  - Rx Channels 61-80
  - Tx Port 1
  - Tx Port 2
  - Tx Port 3
  - Tx Port 4
  - System
  - Alarm Modules
    - SAM 1
    - CAM 4
  - Communications
- History
- Channel Diagnostics
- Configuration
- Calibration
- Maintenance
- About
- Logout

Help

Status - Channel Alarm Module 4

Customer Name - **Comm Site**

Site Name - **Mt Smith**

Model	Serial Number	Firmware Version	Hardware Revision
CAM	Serial not set!	1.0	0

External Alarm Input	Input ID	Status
Ext4-1	Site Door	OK
Ext4-2	Fuel Tank Low	FAIL
Ext4-3	Not defined	OK
Ext4-4	Not defined	OK

Digital Input	Input ID	Function	Status
DI4-1	Police Base PTT	PTT	Inactive
DI4-2	Not defined	Not in use	
DI4-3	Not defined	Not in use	
DI4-4	Not defined	Not in use	
DI4-5	Microwave Alarm	General Purpose	OK
DI4-6	Solar Low Volts	General Purpose	OK
DI4-7	Mains Fail	General Purpose	OK
DI4-8	Batt. Low Volts	General Purpose	OK
DI4-9	Not defined	Not in use	
DI4-10	Not defined	Not in use	

Alarm Output	Port	Channel	Status
CAM4-1	Tx Port 1 - Tx Antenna #1	Tx1-1, Police West	Inactive
CAM4-2	Alarm not in use		Inactive
CAM4-3	Alarm not in use		Inactive
CAM4-4	Alarm not in use		Inactive
CAM4-5	Alarm not in use		Inactive
CAM4-6	Alarm not in use		Inactive
CAM4-7	Alarm not in use		Inactive
CAM4-8	Alarm not in use		Inactive
CAM4-9	Alarm not in use		Inactive
CAM4-10	Alarm not in use		Inactive

Refresh

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This page reports the status of the selected Channel Alarm Module (CAM) if fitted.

Model:

Displays the type of Alarm Module.

Serial Number:

Displays the Alarm Module's Serial Number.

Firmware Version:

Displays the Alarm Module's Firmware Version.

Hardware Revision:

Displays the Alarm Module's Hardware Revision.

External Alarm Input:

Displays the four (4) configurable external digital inputs.

Input ID:

The name assigned for the respective External Alarm Input.

Status:

Indicates the current status of the four (4) External Alarm Inputs.

Digital Input:

Displays the ten (10) configurable digital inputs.

Input ID:

A label for the respective Digital Alarm Input.

Function:

Displays the selected input mode for each of the ten (10) Digital Alarm Inputs

Status:

Indicates the status of the ten (10) Digital Alarm Inputs.

Alarm Output:

Displays the ten (10) configurable digital outputs.

Port:

Displays the Tx Port that the Alarm Output is currently associated to.

Channel:

Displays the Tx Channel that the Alarm Output is currently associated to.

Status:

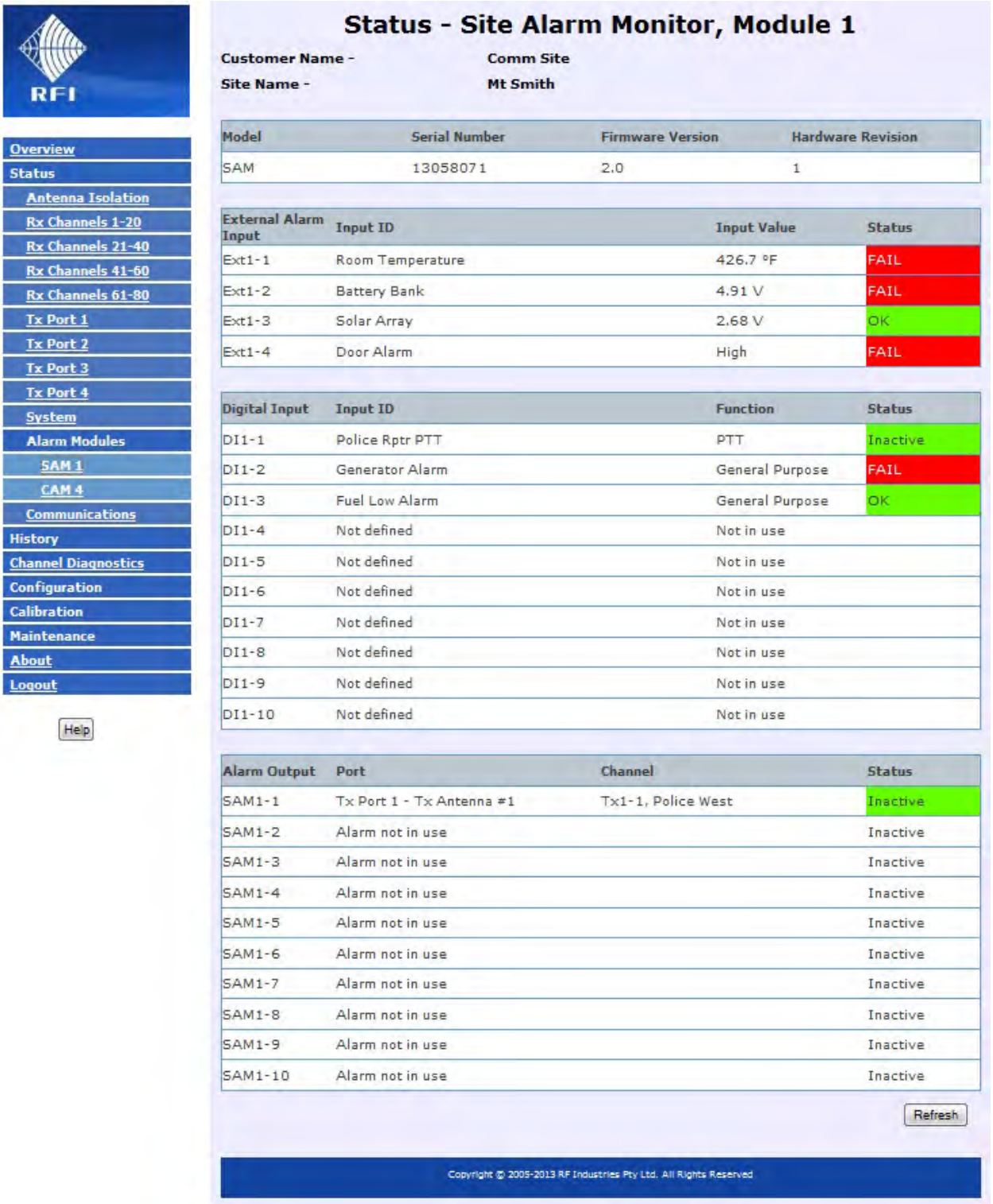
Indicates the status of the ten (10) Digital Alarm Outputs.

Refresh:

Reloads the page, updating the status information.

Note: The "*Status - Alarm Modules*" menu items appear only if one or more (optional) Channel Alarm Module (CAM) or Site Alarm Module (SAM) are installed. Up to ten (10) CAM/SAM units may be fitted to each ASM as required.

10.11 Status – Alarm Modules - SAM


RFI
Overview
Status
Antenna Isolation
Rx Channels 1-20
Rx Channels 21-40
Rx Channels 41-60
Rx Channels 61-80
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
System
Alarm Modules
SAM 1
CAM 4
Communications
History
Channel Diagnostics
Configuration
Calibration
Maintenance
About
Logout
Help
Status - Site Alarm Monitor, Module 1
Customer Name - Comm Site
Site Name - Mt Smith
Model Serial Number Firmware Version Hardware Revision
SAM 13058071 2.0 1
External Alarm Input Input ID Input Value Status
Ext1-1 Room Temperature 426.7 °F FAIL
Ext1-2 Battery Bank 4.91 V FAIL
Ext1-3 Solar Array 2.68 V OK
Ext1-4 Door Alarm High FAIL
Digital Input Input ID Function Status
DI1-1 Police Rptr PTT PTT Inactive
DI1-2 Generator Alarm General Purpose FAIL
DI1-3 Fuel Low Alarm General Purpose OK
DI1-4 Not defined Not in use
DI1-5 Not defined Not in use
DI1-6 Not defined Not in use
DI1-7 Not defined Not in use
DI1-8 Not defined Not in use
DI1-9 Not defined Not in use
DI1-10 Not defined Not in use
Alarm Output Port Channel Status
SAM1-1 Tx Port 1 - Tx Antenna #1 Tx1-1, Police West Inactive
SAM1-2 Alarm not in use Inactive
SAM1-3 Alarm not in use Inactive
SAM1-4 Alarm not in use Inactive
SAM1-5 Alarm not in use Inactive
SAM1-6 Alarm not in use Inactive
SAM1-7 Alarm not in use Inactive
SAM1-8 Alarm not in use Inactive
SAM1-9 Alarm not in use Inactive
SAM1-10 Alarm not in use Inactive
Refresh
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This page reports the status of the selected Site Alarm Module (SAM) if fitted.

Model:

Displays the type of Alarm Module.

Serial Number:

Displays the Alarm Module's Serial Number.

Firmware Version:

Displays the Alarm Module's Firmware Version.

Hardware Revision:

Displays the Alarm Module's Hardware Revision.

External Alarm Input:

Displays the four (4) configurable external temperature/analogue/digital inputs.

Input ID:

The name assigned for the respective External Alarm Input.

Status:

Indicates the current status of the four (4) External Alarm Inputs.

Digital Input:

Displays the ten (10) configurable digital inputs.

Input ID:

A label for the respective Digital Alarm Input.

Function:

Displays the selected input mode for each of the ten (10) Digital Alarm Inputs

Status:

Indicates the status of the ten (10) Digital Alarm Inputs.

Alarm Output:

Displays the ten (10) configurable digital outputs.

Port:

Displays the Tx Port that the Alarm Output is currently associated to.

Channel:

Displays the Tx Channel that the Alarm Output is currently associated to.

Status:

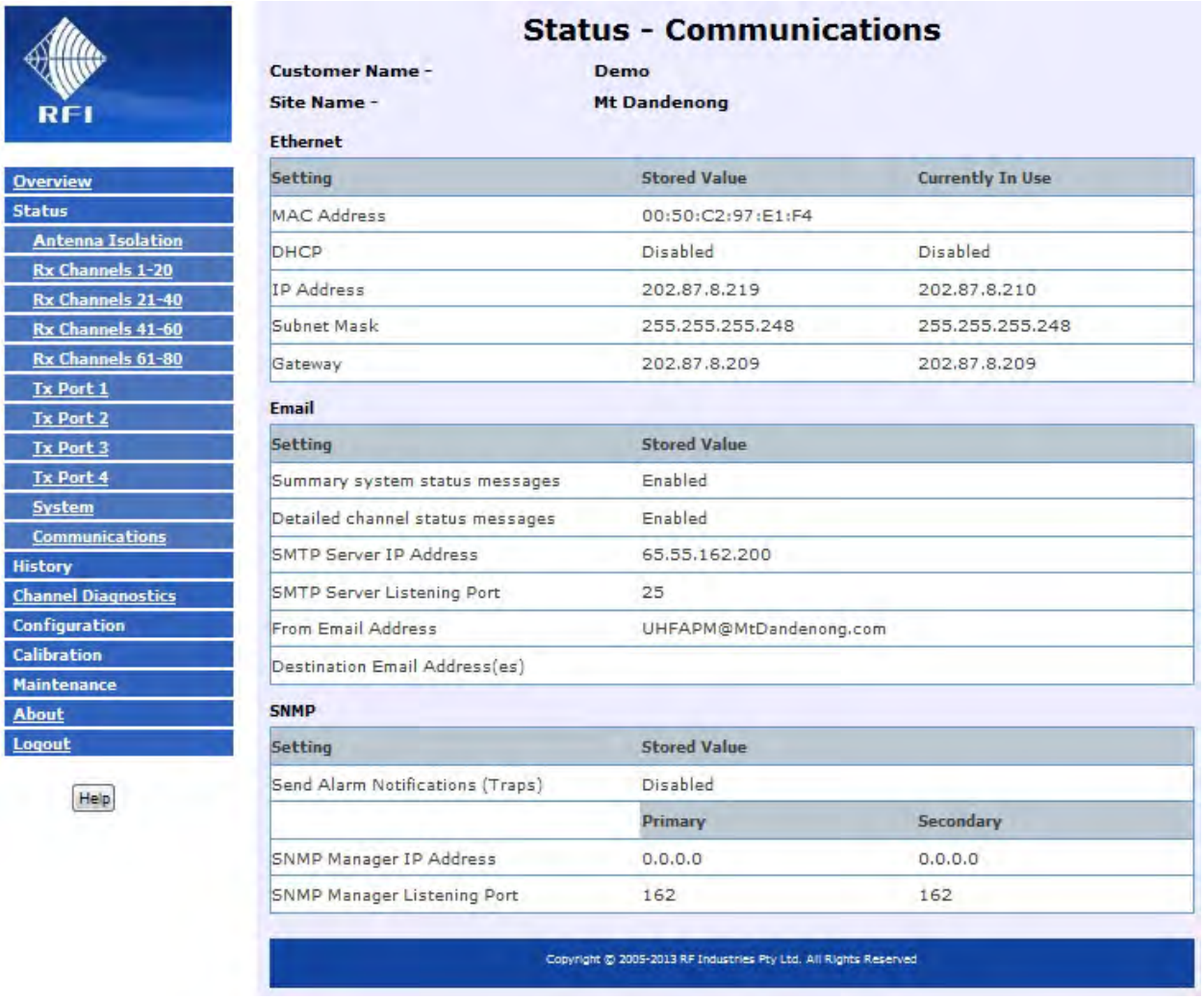
Indicates the status of the ten (10) Digital Alarm Outputs.

Refresh:

Reloads the page, updating the status information.

Note: The *Status - Alarm Modules* menu item under the Status menu appears only if one or more (optional) Site Alarm Module (SAM) is installed. Up to ten (10) CAM/SAM units may be fitted to each ASM as required.

10.12 Status – Communications



This page reports the current Communications settings.

Ethernet

MAC Address:

The physical MAC address of the unit.

DHCP:

If the stored value is enabled, the unit will attempt to get its IP Address, Subnet Mask and Gateway settings from a DHCP server. If a DHCP server cannot be found, the stored settings will be used and the Currently In Use status will show as disabled.

If disabled**,** the stored values will be used unconditionally.

IP Address:

The Stored and Currently In Use IP address values.

Subnet Mask:

The Stored and Currently In Use network Subnet Mask addresses.

Gateway:

The Stored and Currently In Use network Gateway addresses.

Email

Summary system status messages:

Indicates if *System summary status messages* will be sent via email.

Detailed channel status messages:

Indicates if *Detailed channel status messages* will be sent by email.

SMTP Server IP Address:

The IP address that email messages will be sent to.

SMTP Server Listening Port:

The port number used by the SMTP server.

From Email Address:

The email address that this unit will appear as in email messages.

Destination Email Address(es):

The email address(es) that this unit will send email messages to. (up to 4 addresses may be used)

SNMP

Send Alarm Notifications (Traps):

Indicates if sending SNMP Traps are enabled or disabled.

SNMP Manager IP Address:

The IP address that SNMP notifications (SNMP V2c Northbound Traps) will be sent to. Both a Primary and Secondary address may be used if required for redundant SNMP server configurations.

SNMP Manager Listening Port:

The port number used by the SNMP Manager. Both a Primary and Secondary address may be used if required for redundant SNMP server configurations.

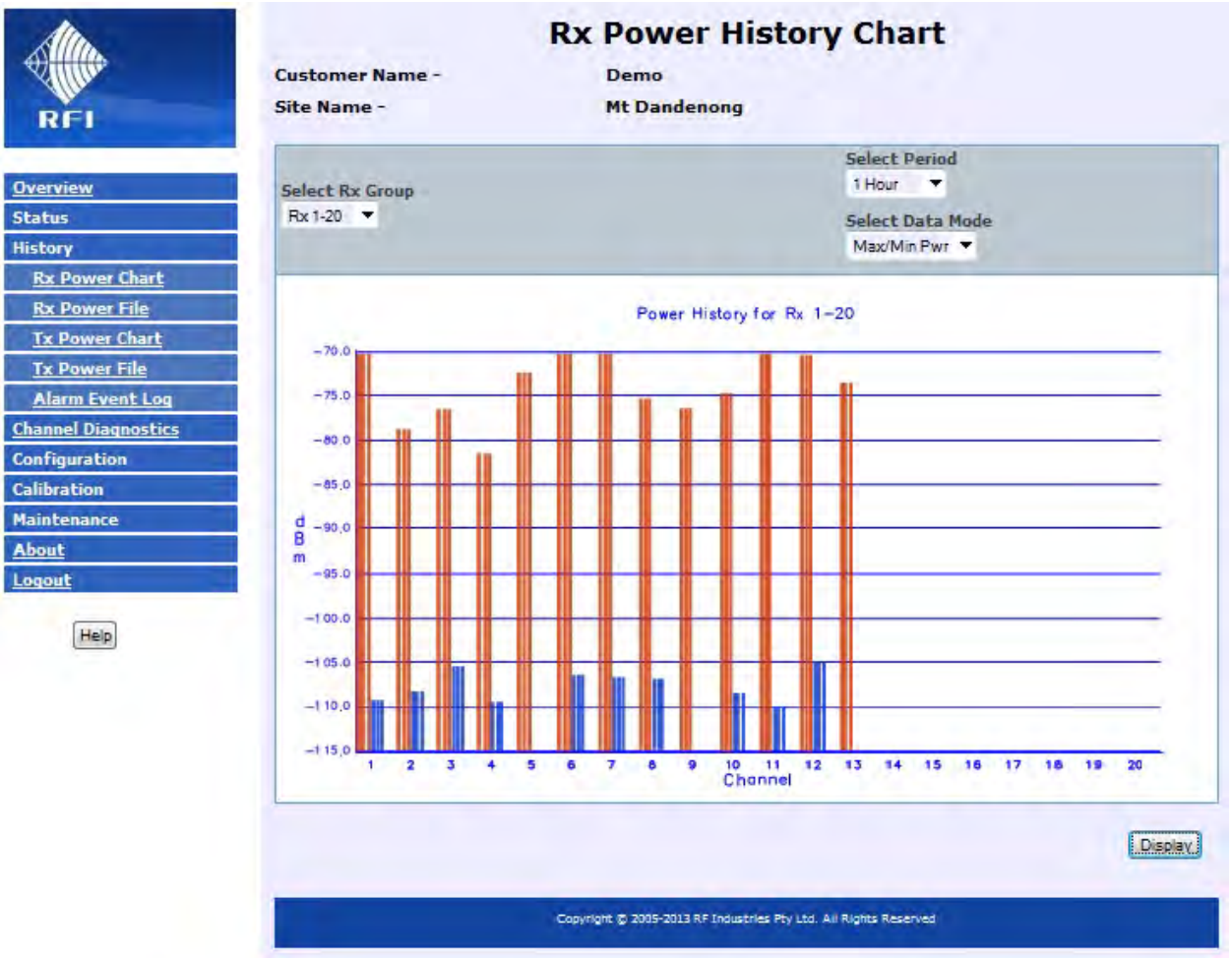
Note: SNMP MIB files for the ASM are available from RFI.

10.13 History Menu

The "History" menu allows the ASMs logged data to be viewed.

Selecting each indented topic under "History" will display that item as a separate display page.

10.14 History – Rx Power Chart



Example of Max/Min Chart

This page displays the logged Rx Power values for a nominated channel.

Select Rx Group:

Select the Port which you desire to display.

Select Period:

Select the past period (working back from the current date and time) for which logged data will be displayed.

Select Data Mode:

Select the data set that you wish to display for the selected Rx Group's channels.

Note: Only channels that have a frequency configured, and which have been enabled will be displayed.

Two display modes are available:

- **Max/Min Pwr**
- **Utilisation**

Since the graph is only able to display approximately 200 data points, each point will normally represent multiple captured level samples. The selection of the Data Mode controls how the multiple samples are combined to present the plotted data value.

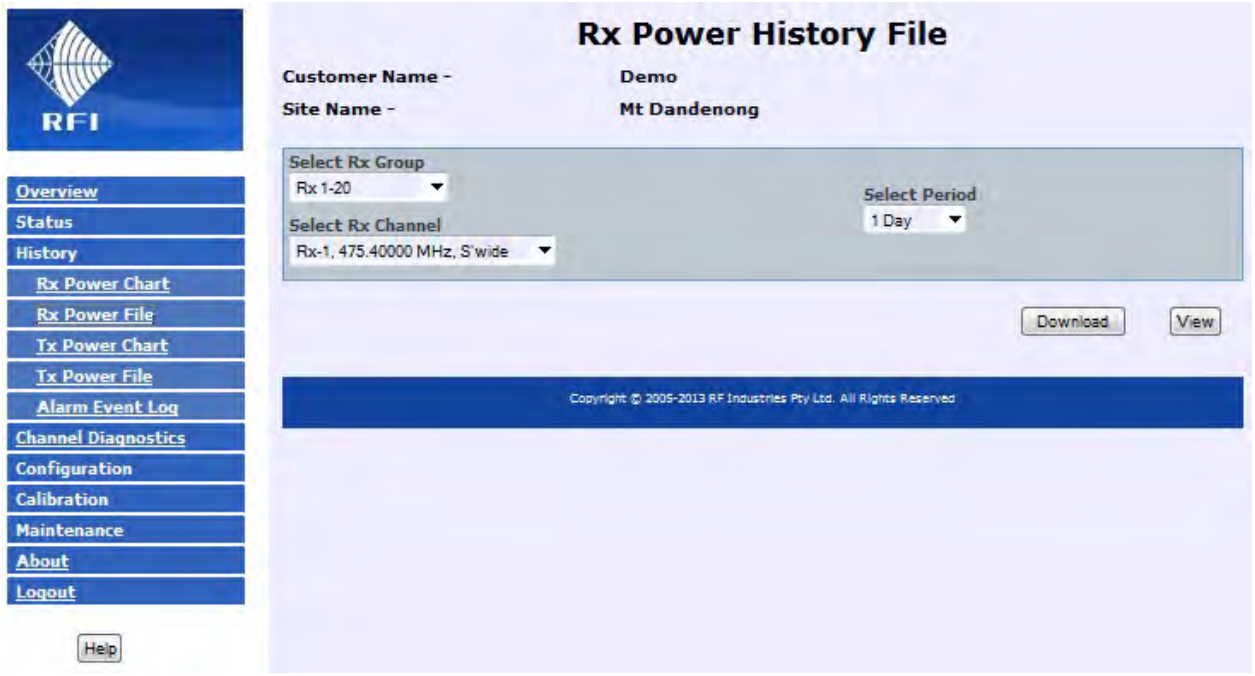
In Max/Min mode, only the maximum and minimum sampled values are used, irrespective of when or how often they occurred in the selected period. If no value reading (above programmed threshold) has been recorded during the period represented by a data point then no data will be displayed on the graph.

In Utilisation mode, the displayed data is created from all measurements recorded above the threshold value. If this threshold value is set too low, all measurements (including site noise) may register a recorded value. As a result, a 100% Utilisation can be displayed on this graph.

All captured level samples are included in the associated data file, in CSV format, which may be downloaded and processed independently (i.e. using other software) if desired.

Note: During calculations, the processing of all of the recorded data to create the graph may result in delays to the display of the data. If a significant amount of data has been logged, displaying periods back in time may also result in delays while this data is retrieved from memory, processed, and then sent to the viewer's computer.

10.15 History – Rx Power File



This page allows logged data to be downloaded, saved or displayed for a nominated channel. Data is provided in a CSV file format for ease of import and manipulation.

Select Rx Group:

Select the Group on which the desired Rx Channel is located.

Select Rx Channel:

Select the Rx Channel that is desired to be viewed.
Note that only channels that have a frequency configured, and which have been enabled will be selectable.

Select Period:

Select the past period (working back from the current date and time) for which logged data will be displayed.

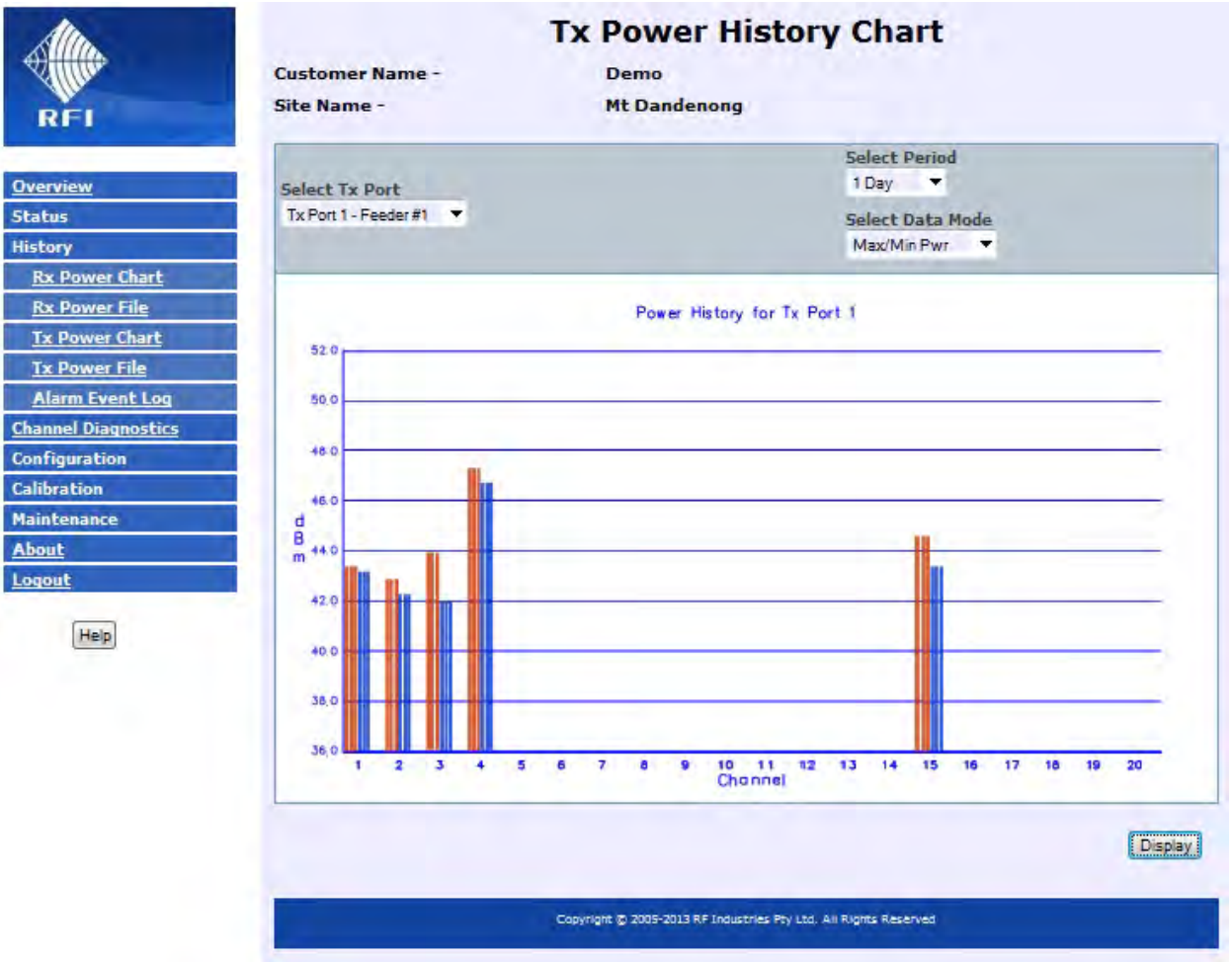
Download:

Use this button to open a "File Download" or "Save As" dialog for saving the CSV data file.

View:

Use this button to open the CSV data file for viewing.

10.16 History – Tx Power Chart



Example of Max/Min Chart

This page displays the logged Tx Power values for a nominated channel.

Select Tx Port:

Select the Port which you desire to display.

Select Period:

Select the past period (working back from the current date and time) for which logged data will be displayed.

Select Data Mode:

Select the data set that you wish to display for the selected Tx Port's channels.
Note that only channels that have a frequency configured and which have been enabled will be selectable.

Select Data Mode:

Select the display parameter against which logged data will be displayed.

Three display modes are available:

- **Max/Min Pwr**
- **Max/Min VSWR**
- **Utilisation**

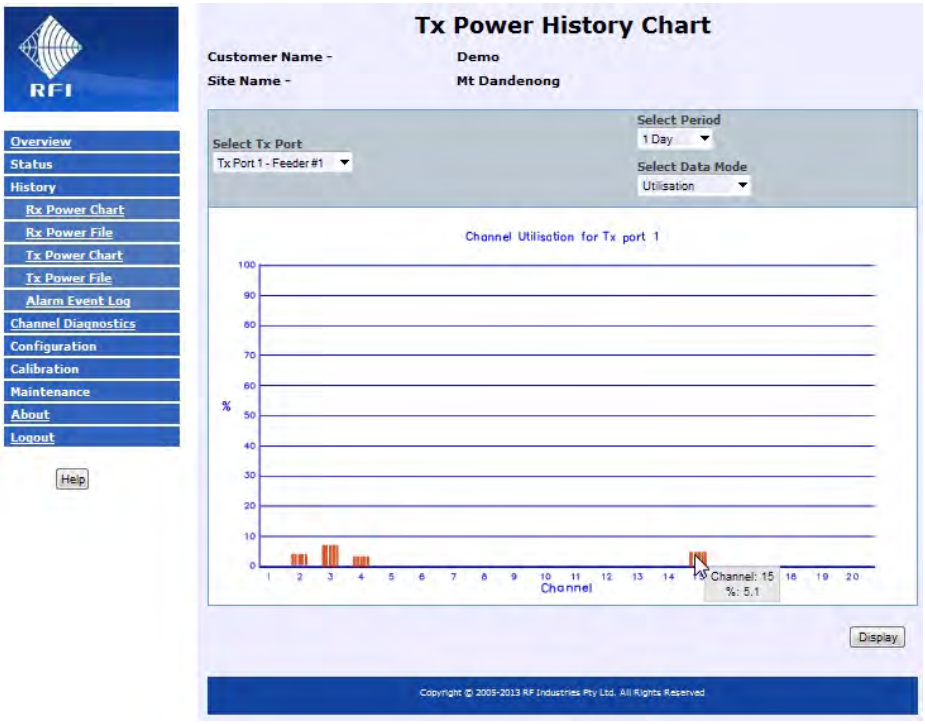
Since the graph is only able to display approximately 200 data points, each point will normally represent multiple captured level samples. The selection of the Data Mode controls how the multiple samples are combined to present the plotted data value.

In Max/Min and VSWR modes, only the maximum and minimum sampled values are used, irrespective of when or how often they occurred in the selected period. If no value reading (above programmed threshold) has been recorded during the period represented by a data point then a "minimum value" will be displayed on the graph.

In Utilisation mode, the measured occurrence of channel activity (above programmed threshold) during the selected period is displayed as a percentage. Depending on the number of channels being monitored in each measurement cycle, and the random sporadic nature of channel activity, this display may some inaccuracy. Practically, it may be used to conveniently indicate "general" channel (and network) loading, and allows activity to be correlated against specific time/day by viewing the logged data that has been recorded. This capability is useful for identifying co-incidental channel(s) activity during periods of interference – a likely indicator of intermodulation (IM) occurrence.

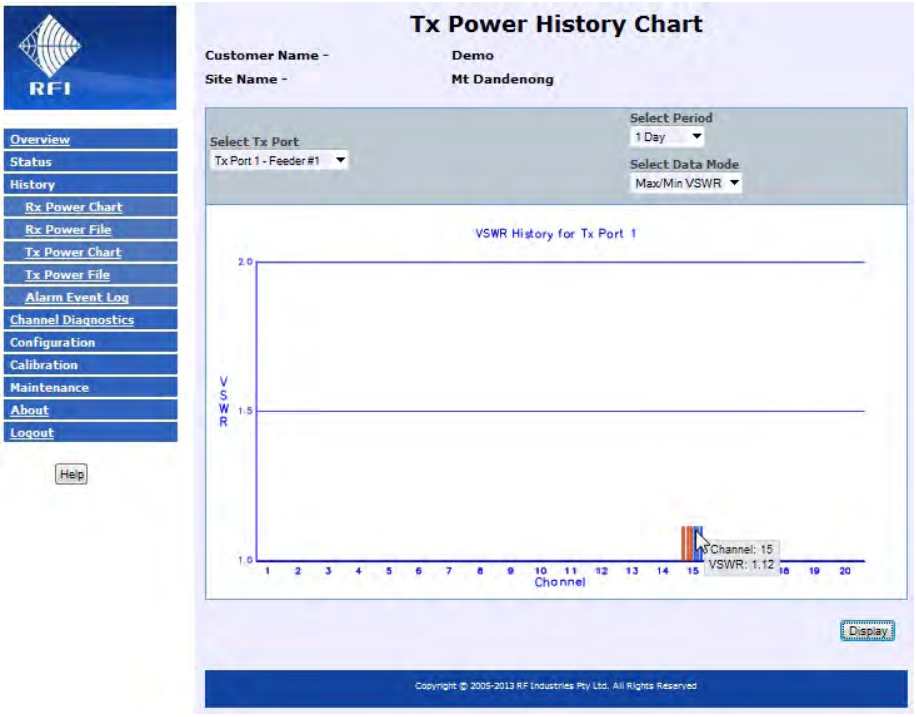
All captured level samples are included in the History File, in CSV format, which may be downloaded and processed independently (i.e. using other software) if desired.

Note: During calculations, the processing of all of the recorded data to create the graph may result in delays to the display of the data. If a significant amount of data has been logged, displaying periods back in time may also result in delays while this data is retrieved from memory, processed, and then sent to the viewer's computer.



Example of Utilisation Chart

Note: Hovering the mouse cursor over the upper portion of a displayed bar will return the actual displayed value (refer example below).

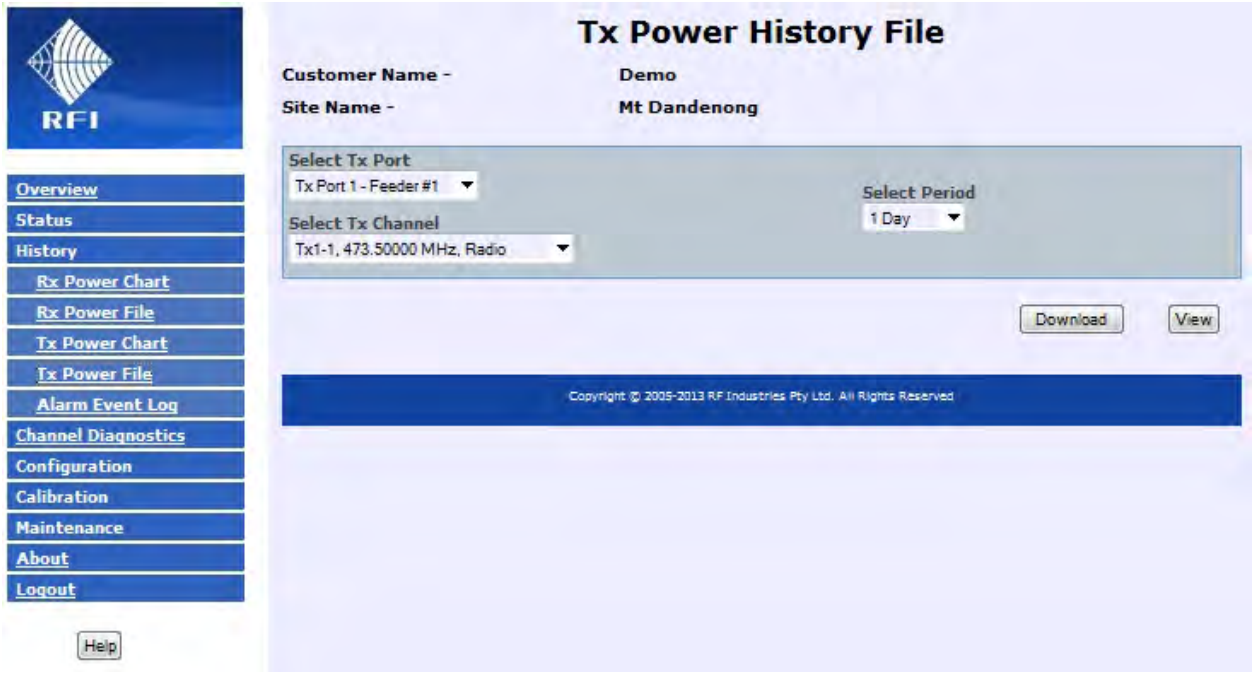


Example of Tx VSWR Chart

Display:

This will refresh the display using the selected settings. Some delay may be experienced while data collates.

10.17 History – Tx Power File



This page allows logged data to be downloaded, saved or displayed for a nominated channel. Data is provided in a CSV file format for ease of import and manipulation.

Select Tx Port:

Select the Port on which the desired Tx Channel is located.

Select Tx Channel:

Select the Rx Channel that is desired to be viewed.
Note that only channels that have a frequency configured and which have been enabled will be selectable.

Select Period:

Select the past period (working back from the current date and time) for which logged data will be displayed.

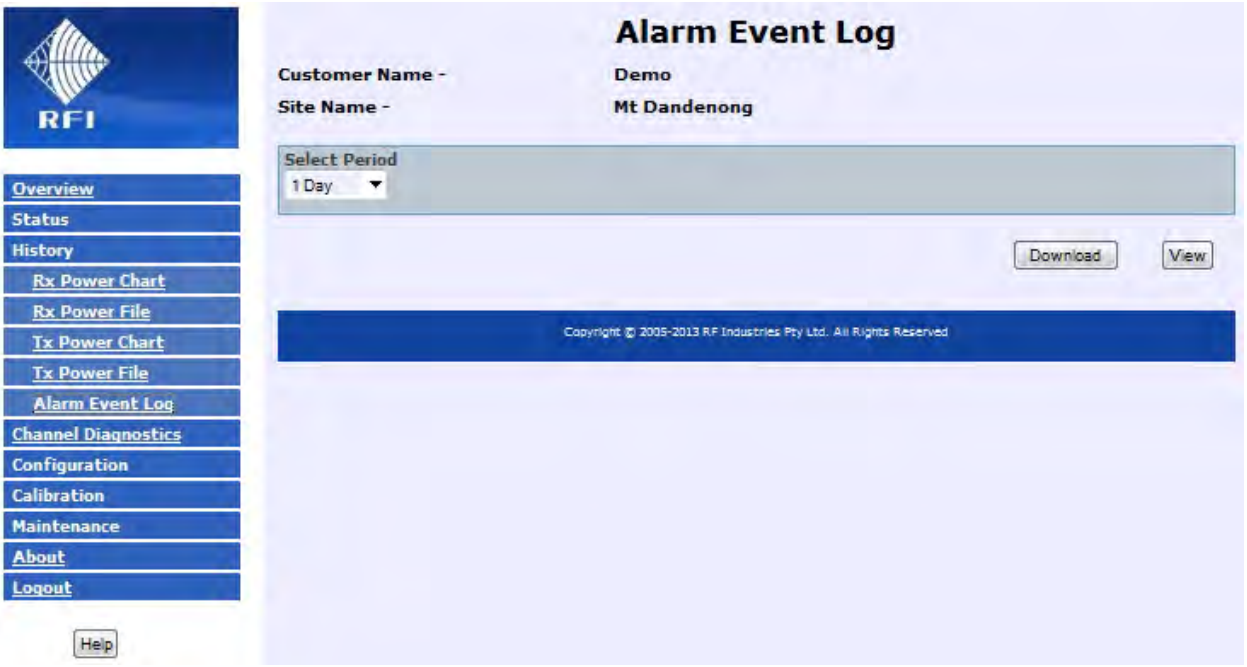
Download:

Use this button to open a "File Download" or "Save As" dialog for saving the CSV data file.

View:

Use this button to open the CSV data file for viewing.

10.18 History – Alarm Event Log



This page allows logged data to be downloaded, saved or displayed for a alarms in the current Alarm Event Log. Data is provided in a CSV file format for ease of import and manipulation.

Select Period:

Select the past period (working back from the current date and time) for which logged data will be displayed.

Download:

Use this button to open a "File Download" or "Save As" dialog for saving the CSV data file.

View:

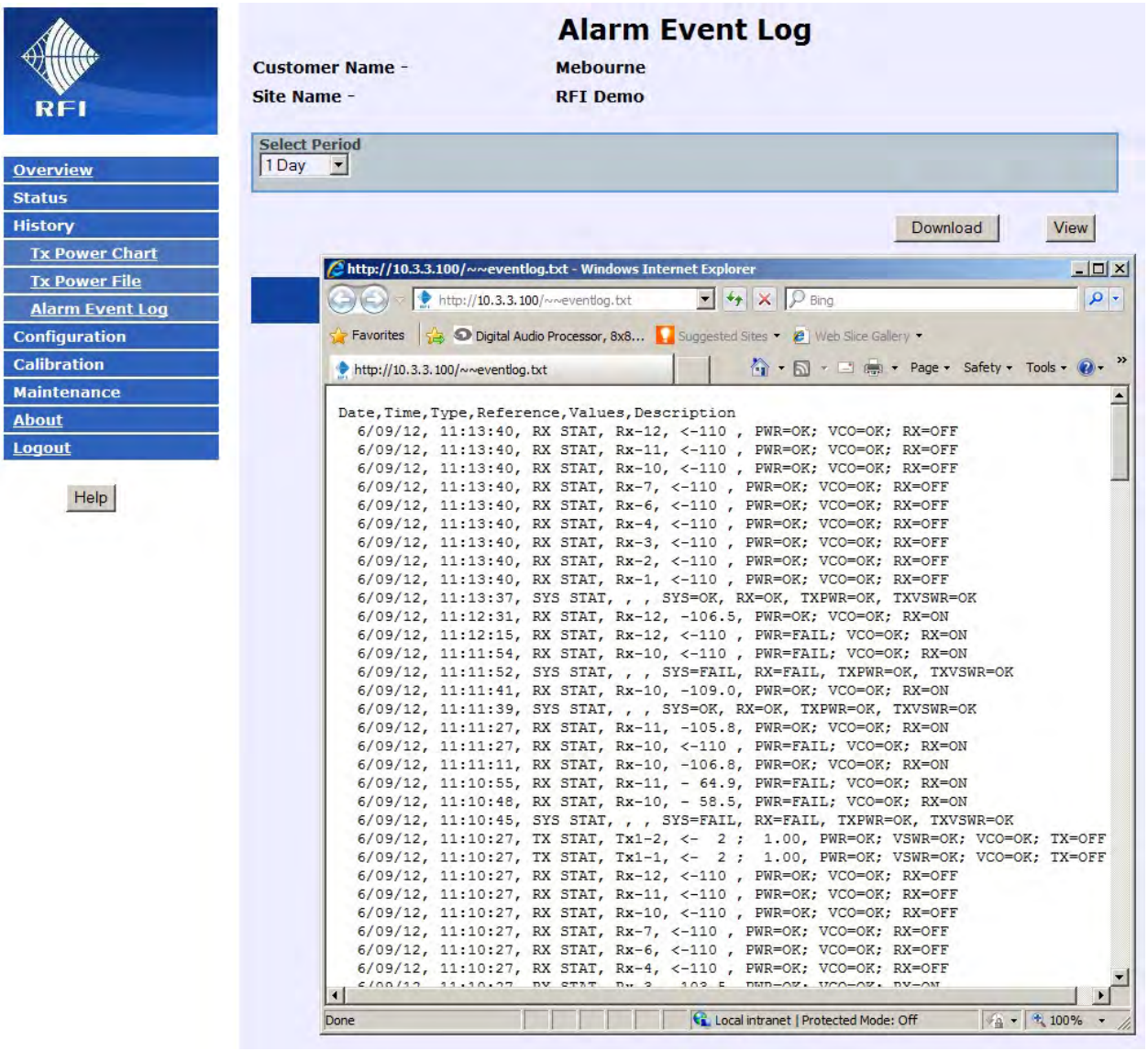
Opens a new window in which the data records will be displayed.

Due to the potential size of some data logs, using View is not recommended for displaying a large amount of data.

View:

Opens a new window in which the data records will be displayed.

Due to the potential size of some data logs, using View is not recommended for displaying a large amount of data.

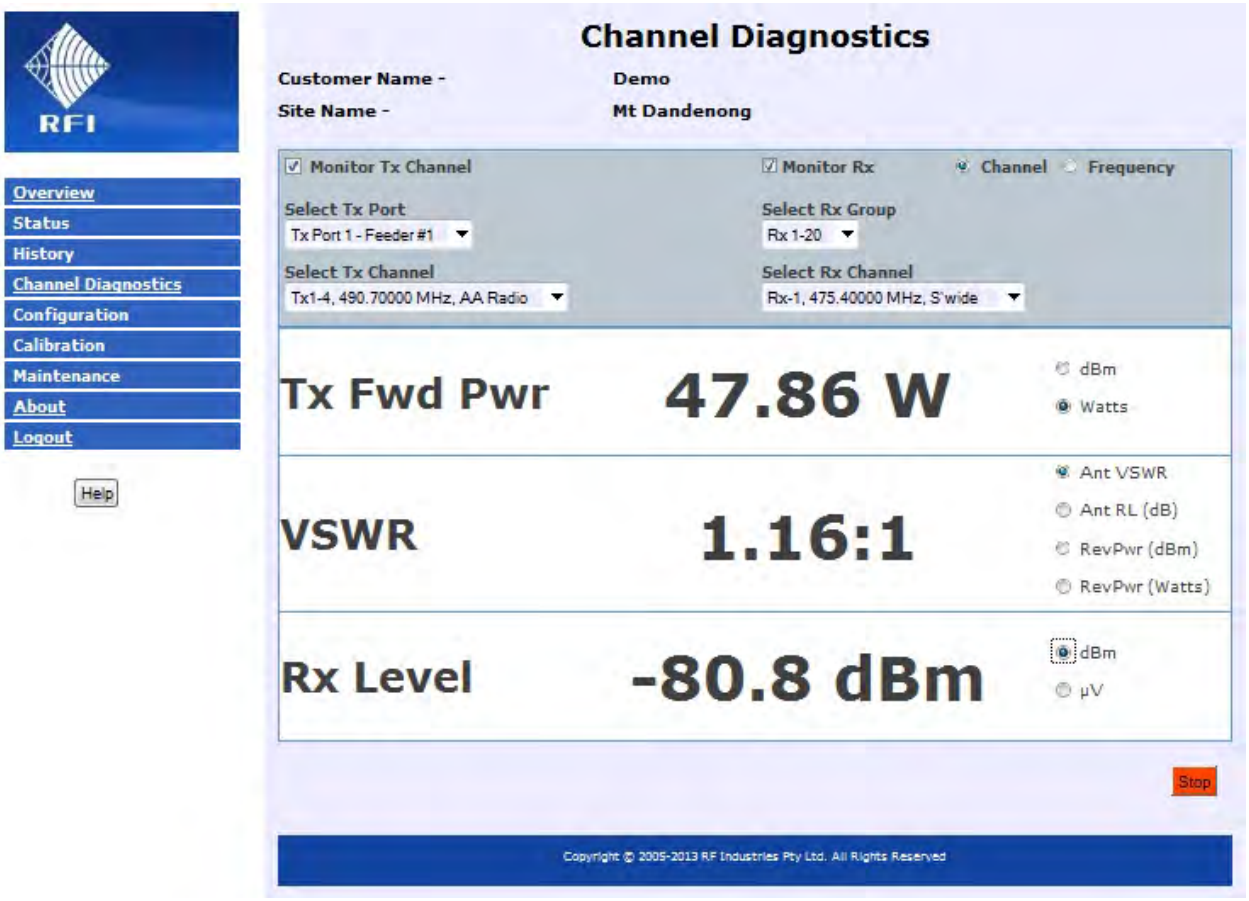

Alarm Event Log
Customer Name - Mebourne
Site Name - RFI Demo
Select Period
1 Day
Download
View
Overview
Status
History
Tx Power Chart
Tx Power File
Alarm Event Log
Configuration
Calibration
Maintenance
About
Logout
Help
http://10.3.3.100/~~eventlog.txt - Windows Internet Explorer
Date,Time,Type,Reference,Values,Description
6/09/12, 11:13:40, RX STAT, Rx-12, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:13:40, RX STAT, Rx-11, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:13:40, RX STAT, Rx-10, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:13:40, RX STAT, Rx-7, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:13:40, RX STAT, Rx-6, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:13:40, RX STAT, Rx-4, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:13:40, RX STAT, Rx-3, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:13:40, RX STAT, Rx-2, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:13:40, RX STAT, Rx-1, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:13:37, SYS STAT, , , SYS=OK, RX=OK, TXPWR=OK, TXVSWR=OK
6/09/12, 11:12:31, RX STAT, Rx-12, -106.5, PWR=OK; VCO=OK; RX=ON
6/09/12, 11:12:15, RX STAT, Rx-12, <-110 , PWR=FAIL; VCO=OK; RX=ON
6/09/12, 11:11:54, RX STAT, Rx-10, <-110 , PWR=FAIL; VCO=OK; RX=ON
6/09/12, 11:11:52, SYS STAT, , , SYS=FAIL, RX=FAIL, TXPWR=OK, TXVSWR=OK
6/09/12, 11:11:41, RX STAT, Rx-10, -109.0, PWR=OK; VCO=OK; RX=ON
6/09/12, 11:11:39, SYS STAT, , , SYS=OK, RX=OK, TXPWR=OK, TXVSWR=OK
6/09/12, 11:11:27, RX STAT, Rx-11, -105.8, PWR=OK; VCO=OK; RX=ON
6/09/12, 11:11:27, RX STAT, Rx-10, <-110 , PWR=FAIL; VCO=OK; RX=ON
6/09/12, 11:11:11, RX STAT, Rx-10, -106.8, PWR=OK; VCO=OK; RX=ON
6/09/12, 11:10:55, RX STAT, Rx-11, - 64.9, PWR=FAIL; VCO=OK; RX=ON
6/09/12, 11:10:48, RX STAT, Rx-10, - 58.5, PWR=FAIL; VCO=OK; RX=ON
6/09/12, 11:10:45, SYS STAT, , , SYS=FAIL, RX=FAIL, TXPWR=OK, TXVSWR=OK
6/09/12, 11:10:27, TX STAT, Tx1-2, <- 2 ; 1.00, PWR=OK; VSWR=OK; VCO=OK; TX=OFF
6/09/12, 11:10:27, TX STAT, Tx1-1, <- 2 ; 1.00, PWR=OK; VSWR=OK; VCO=OK; TX=OFF
6/09/12, 11:10:27, RX STAT, Rx-12, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:10:27, RX STAT, Rx-11, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:10:27, RX STAT, Rx-10, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:10:27, RX STAT, Rx-7, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:10:27, RX STAT, Rx-6, <-110 , PWR=OK; VCO=OK; RX=OFF
6/09/12, 11:10:27, RX STAT, Rx-4, <-110 , PWR=OK; VCO=OK; RX=OFF
Done
Local intranet | Protected Mode: Off
100%

Example Alarm Event log opened in "View"

Note: In a K1 hardware model, approx. 2.5Mb of data storage is available for all log files' data. Depending on the number of Alarm Events recorded, the period of history that can be stored can vary significantly. The available data storage area operates as a FIFO (first-in-first-out) buffer. That is, once full, the oldest stored alarm event is removed to make room for the newest measurement.

In a K2 hardware model, approx. 4Gb of data storage is available for all log files' data. This data area also operates as a FIFO buffer.

10.19 Channel Diagnostics



The Channel Diagnostics page presents a real time Tx Power and Rx Level Meter. The current Tx Power, Tx VSWR and Rx Level for the selected Tx and Rx channels are continuously updated once the Start/Stop button has been activated.

The increased font size of the values displayed on this page assist viewing them from a distance.

Note: The Channel Diagnostics screen is only visible from the Administrator login level, it is not visible from the User login level.

Monitor Tx Channel:

Selects if a Tx frequency will be measured and displayed during each measurement cycle.

Select Tx Port:

Select the Port on which the desired Tx Channel is located.

Select Tx Channel:

Select the Tx Channel that is desired to be monitored.

Note: Only channels that have a frequency configured, and which have been "enabled" will be selectable.

Note: The Channel Diagnostics screen has been optimised for a fast screen refresh rate to assist tuning and other maintenance activities. As such, for some modulation types, the Tx Fwd Pwr and Rx Level values displayed on this page may vary slightly from those displayed on the Status screens. For highest accuracy, use the Status screens for determining actual Tx Fwd Power and Rx Level values.

Monitor Rx Channel:

Selects if a Rx frequency will be measured and displayed during each measurement cycle.

Channel:

Select the Rx Channel that is desired to be monitored.

Note: Only channels that have a frequency configured, and which have been "enabled" will be selectable.

Frequency:

Select or Enter the Rx Frequency that is desired to be monitored.

Note: The frequency may be entered by selecting the field and typing in a value, which may be changed by using the up/down keys on your keyboard, or by selecting the drop down arrow next to the field and scrolling through and selecting the desired frequency values.

Select Rx Group:

Select the Group in which the desired Rx Channel is located.

Select Rx Channel:

Select the Rx Channel that is desired to be monitored.

Note: Only channels that have a frequency configured, and which have been "enabled" will be selectable.

Displayed Values:

The units of measurement and display for the various values may be changed by clicking on the desired selections.

Start/Stop:

This starts or stops the continuously updating measurements.

The Power and Insertion Loss measurements assume that the Port Coupling losses and the Channel BTx Power have been previously calibrated (refer elsewhere in this manual).

Note: When Service Mode is running, the unit will not be monitoring or measuring any other programmed channels. Clicking the Stop button, navigating to another page within the site, or closing the browser window/tab will restore the unit's normal operation.

Note: The Service Mode screen is only visible from the Administrator login level, it is not visible from the User login level.

10.20 Configuration Menu

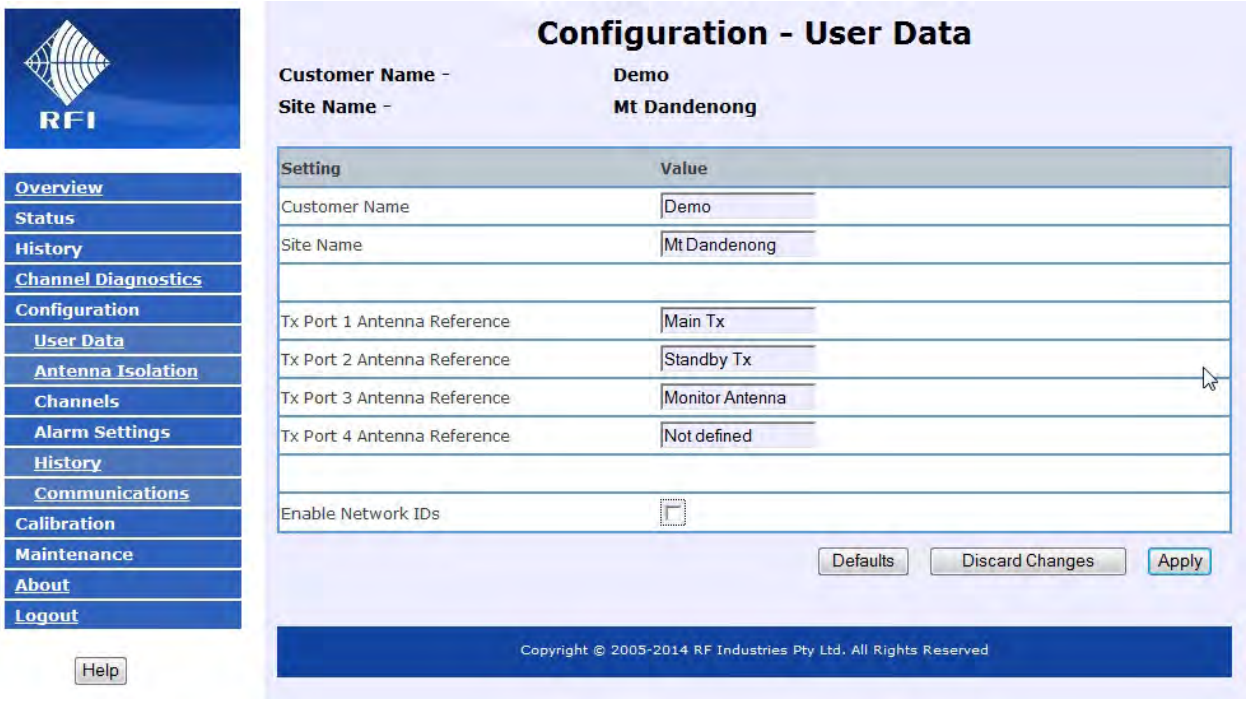
The "Configuration" menu allows all of the ASMs configurable parameters to be programmed.

Selecting each indented topic under "Configuration" will display that item as a separate display page.

Note: The Configuration menu and screens are only visible from the Administrator login level, and are not visible from the User login level.

Note: The "*Configuration - Channel Alarm Modules*" and "*Configuration – Site Alarm Modules*" menu items appear only if one or more (optional) Channel Alarm Module (CAM) or Site Alarm Module (SAM) are installed. Up to ten (10) CAM/SAM units may be fitted to each ASM as required.

10.21 Configuration – User Data



On this page you can enter descriptive texts for Customer Name**,** Site Name and each of the Ports

Customer Name:

The name of the network or the customer equipment being monitored by the ASM.

Site Name:

The name of the site on which the network or the customer equipment is located.

Tx Port Antenna References:

The names or other unique identifier for each of the Tx Antennas being monitored by the ASM.

Enable Network IDs:

Select if Network IDs are to be used in the ASM Status and Configuration screens.

Defaults:

Clicking this sets all of the descriptions to "Not Defined"

Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.
Note that if invalid values are being displayed after an Apply attempt, these values may not match the current system configuration. In this case, just select the Configure/User Data menu item again to re-display the current configuration.

Apply:

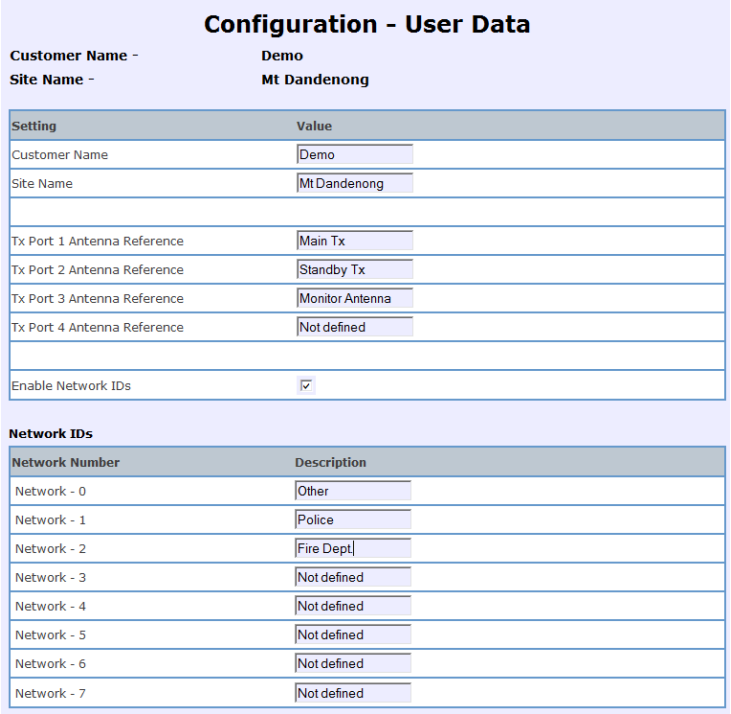
This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

Enable Network IDs

If Network IDs are desired to be used, then this item should be selected. When selected, an additional field will appear;

The eight Network IDs allow monitored channels to be nominated as being affiliated together in the *Channels – Status* screens.

The inclusion of Network IDs allows channels to be conveniently 'bundled' into their respective networks when channels are co-located on shared combiners.



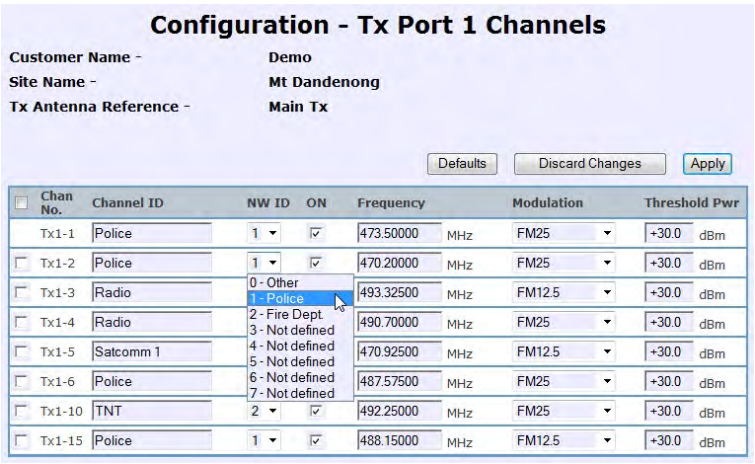
Configuration - User Data

Customer Name - Demo
Site Name - Mt Dandenong

Setting	Value
Customer Name	Demo
Site Name	Mt Dandenong
Tx Port 1 Antenna Reference	Main Tx
Tx Port 2 Antenna Reference	Standby Tx
Tx Port 3 Antenna Reference	Monitor Antenna
Tx Port 4 Antenna Reference	Not defined
Enable Network IDs	☑

Network IDs

Network Number	Description
Network - 0	Other
Network - 1	Police
Network - 2	Fire Dept
Network - 3	Not defined
Network - 4	Not defined
Network - 5	Not defined
Network - 6	Not defined
Network - 7	Not defined



Configuration - Tx Port 1 Channels

Customer Name - Demo
Site Name - Mt Dandenong
Tx Antenna Reference - Main Tx

Defaults | Discard Changes | Apply

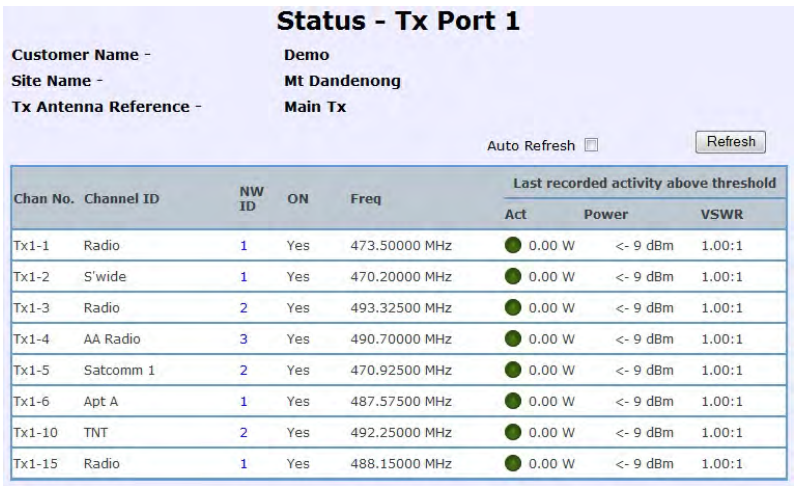
Chan No.	Channel ID	NW ID	ON	Frequency		Modulation	Threshold Pwr	
Tx1-1	Police	1	☑	473.50000	MHz	FM25	+30.0	dBm
Tx1-2	Police	1	☑	470.20000	MHz	FM25	+30.0	dBm
Tx1-3	Radio	1	☑	493.32500	MHz	FM12.5	+30.0	dBm
Tx1-4	Radio	1	☑	490.70000	MHz	FM25	+30.0	dBm
Tx1-5	Satcomm 1	1	☑	470.92500	MHz	FM12.5	+30.0	dBm
Tx1-6	Police	1	☑	487.57500	MHz	FM25	+30.0	dBm
Tx1-10	TNT	2	☑	492.25000	MHz	FM25	+30.0	dBm
Tx1-15	Police	1	☑	488.15000	MHz	FM12.5	+30.0	dBm

0 - Other
1 - Police
2 - Fire Dept
3 - Not defined
4 - Not defined
5 - Not defined
6 - Not defined
7 - Not defined

The eight Network IDs allow monitored Channels to be nominated as being affiliated together in the *Configuration – Tx Port* screens.

The Network ID affiliations are then displayed In the Status – Tx Ports screens.

Network IDs are included in SNMP, Email and Manager Messages UDP data packets.



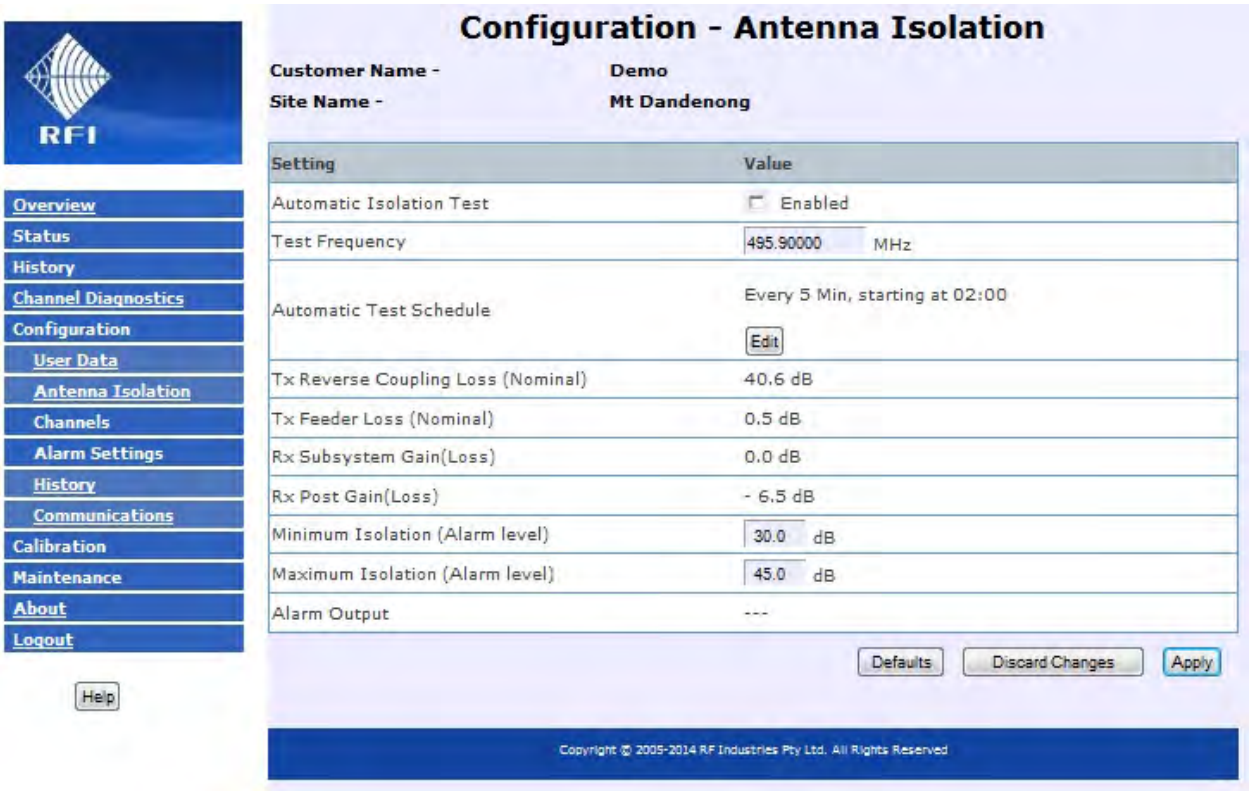
Status - Tx Port 1

Customer Name - Demo
Site Name - Mt Dandenong
Tx Antenna Reference - Main Tx

Auto Refresh ☐ Refresh

Chan No.	Channel ID	NW ID	ON	Freq	Last recorded activity above threshold		
					Act	Power	VSWR
Tx1-1	Radio	1	Yes	473.50000 MHz	0.00 W	<- 9 dBm	1.00:1
Tx1-2	S'wide	1	Yes	470.20000 MHz	0.00 W	<- 9 dBm	1.00:1
Tx1-3	Radio	2	Yes	493.32500 MHz	0.00 W	<- 9 dBm	1.00:1
Tx1-4	AA Radio	3	Yes	490.70000 MHz	0.00 W	<- 9 dBm	1.00:1
Tx1-5	Satcomm 1	2	Yes	470.92500 MHz	0.00 W	<- 9 dBm	1.00:1
Tx1-6	Apt A	1	Yes	487.57500 MHz	0.00 W	<- 9 dBm	1.00:1
Tx1-10	TNT	2	Yes	492.25000 MHz	0.00 W	<- 9 dBm	1.00:1
Tx1-15	Radio	1	Yes	488.15000 MHz	0.00 W	<- 9 dBm	1.00:1

10.22 Configuration – Antenna Isolation



The Antenna Isolation "Configuration" page allows this test's parameters to be entered.

Automatic Isolation Test:

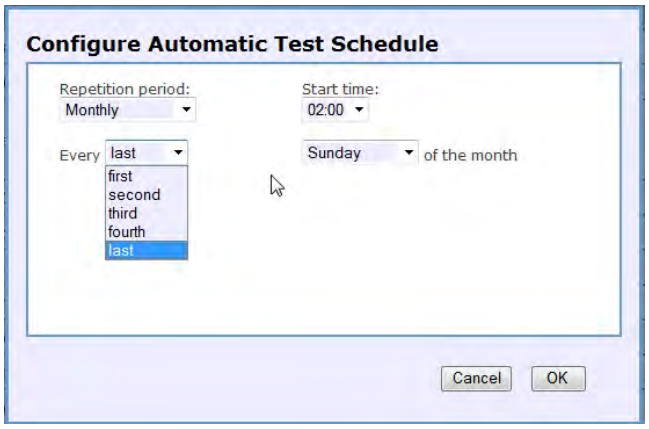
This determines whether the Antenna Isolation Test will be performed automatically.

Test Frequency:

The frequency upon which the Antenna Isolation Test will be performed.

Note: Depending on local licensing and regulatory requirements this frequency will normally be one of the sites existing Base Station receive frequencies.

Automatic Test Schedule:



This determines when the *Antenna Isolation Test* will be performed when Automatic Isolation test is selected. Clicking *Edit* selects a calendar menu that allows a wide range of minute/hour/day/week/month selections to be chosen, enabling specific times to be allocated for the Antenna Isolation Test.

Tx Reverse Coupling Loss:

The value of coupling loss that has been entered in the Tx Port Calibration page. This value is used in the calculation of the Antenna Isolation value.

Tx Feeder Loss:

The value of Tx Antenna Feeder loss that has been entered in the Tx Port Calibration page. This value is used in the calculation of the Antenna Isolation value.

Rx Subsystem Gain(Loss):

This field is now populated from the *Calibration – Rx Port* page.

Rx Post Gain(Loss):

This field is now populated from the *Calibration – Rx Port* page.

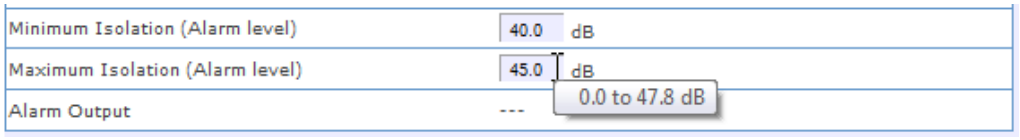
Minimum Isolation (Alarm Level):

The Antenna Isolation value below which an alarm will be generated when the Antenna Isolation measurement is carried out.

Maximum Isolation (Alarm Level):

The Antenna Isolation value above which an alarm will be generated when the Antenna Isolation measurement is carried out. This value is limited by the Antenna Isolation signal generator output level, antenna feeder losses, and the ASM's receive sensitivity capabilities.

Hovering the mouse over the Minimum and Maximum Isolation (Alarm Level) fields will show the range of values that may be entered based on the current Tx coupler, feeder loss, and ASM sensitivity parameters within the system.



Alarm Output:

If the Antenna Isolation alarm status is assigned as the source for an Alarm Module Alarm Output, or for one of the System Alarm relays, this displays the associated alarm output. For example;

"1-4" indicates Alarm Module 1, Alarm Output 4
"S-2" indicates System Alarm relay 2

Defaults:

Clicking this resets all data fields to the factory defaults.

Discard Changes:

Click this button to restore the values to those current saved. Note that if invalid values are being displayed after an Apply attempt, these values may not match the current system configuration. In this case, just select the Configure/User Data menu item again to re-display the current configuration.

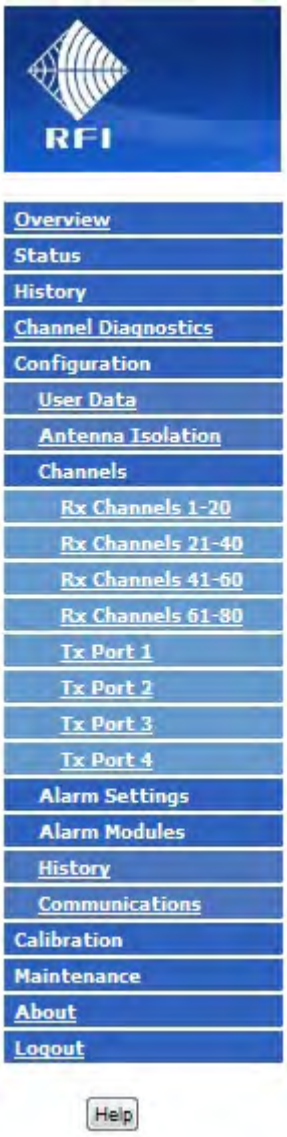
Save:

This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

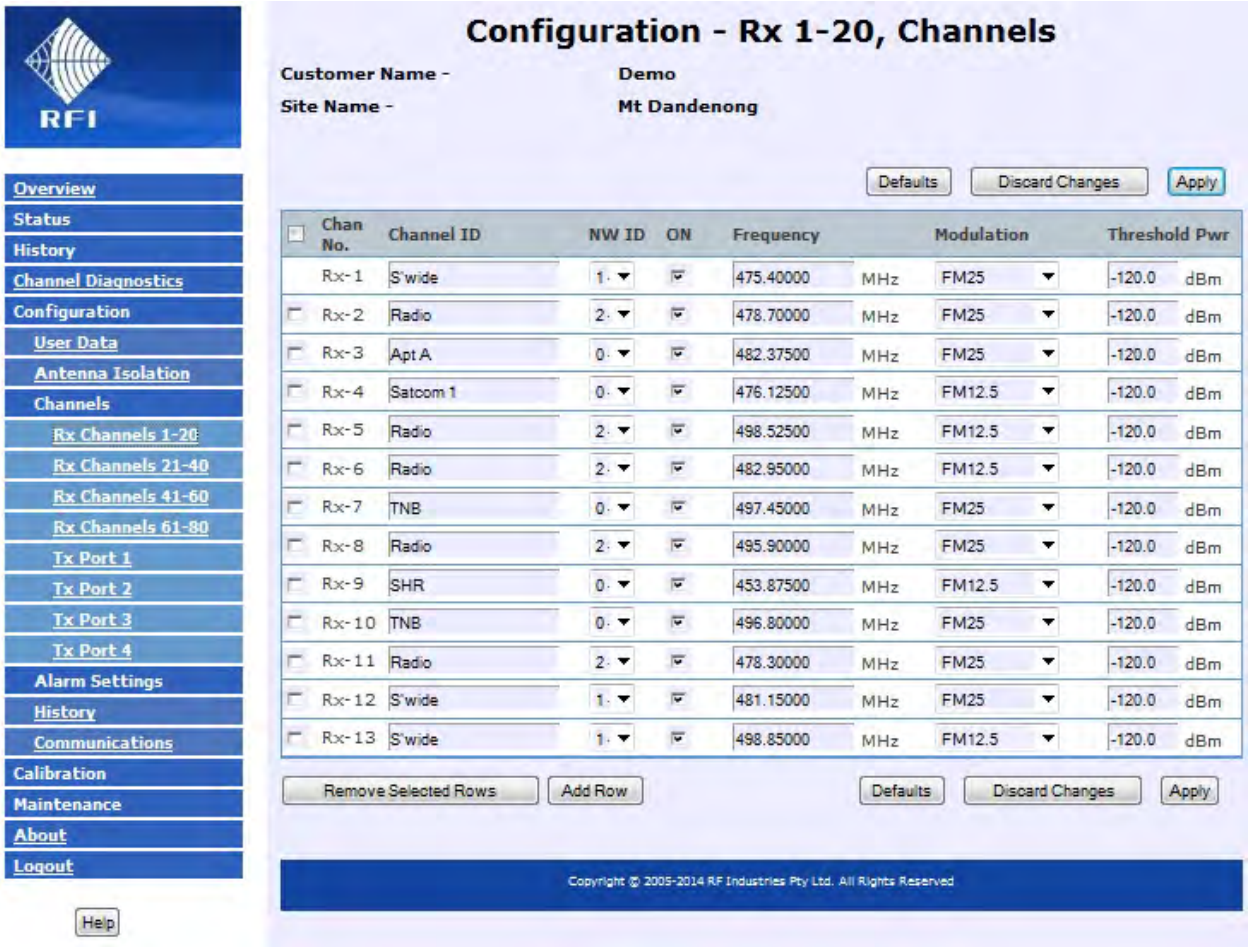
10.23 Configuration – Channels - Menu

The "Configuration - Channels" menu allows all of the ASMs channel specific parameters to be programmed.

Selecting each indented topic under "Configure - Channels" will display that item as a separate display page.



10.24 Configuration – Rx Channels 1-20


Configuration - Rx 1-20, Channels
Customer Name - Demo
Site Name - Mt Dandenong
Overview
Status
History
Channel Diagnostics
Configuration
User Data
Antenna Isolation
Channels
Rx Channels 1-20
Rx Channels 21-40
Rx Channels 41-60
Rx Channels 61-80
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
Alarm Settings
History
Communications
Calibration
Maintenance
About
Logout
Help
Defaults
Discard Changes
Apply
Chan No. | Channel ID | NW ID | ON | Frequency | Modulation | Threshold Pwr
Rx-1 | S'wide | 1 | 475.40000 MHz | FM25 | -120.0 dBm
Rx-2 | Radio | 2 | 478.70000 MHz | FM25 | -120.0 dBm
Rx-3 | Apt A | 0 | 482.37500 MHz | FM25 | -120.0 dBm
Rx-4 | Satcom 1 | 0 | 476.12500 MHz | FM12.5 | -120.0 dBm
Rx-5 | Radio | 2 | 498.52500 MHz | FM12.5 | -120.0 dBm
Rx-6 | Radio | 2 | 482.95000 MHz | FM12.5 | -120.0 dBm
Rx-7 | TNB | 0 | 497.45000 MHz | FM25 | -120.0 dBm
Rx-8 | Radio | 2 | 495.90000 MHz | FM25 | -120.0 dBm
Rx-9 | SHR | 0 | 453.87500 MHz | FM12.5 | -120.0 dBm
Rx-10 | TNB | 0 | 496.80000 MHz | FM25 | -120.0 dBm
Rx-11 | Radio | 2 | 478.30000 MHz | FM25 | -120.0 dBm
Rx-12 | S'wide | 1 | 481.15000 MHz | FM25 | -120.0 dBm
Rx-13 | S'wide | 1 | 498.85000 MHz | FM12.5 | -120.0 dBm
Remove Selected Rows
Add Row
Defaults
Discard Changes
Apply
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Each of the Rx channels (Groups), displayed 20 per page, is configurable as illustrated in this Rx Channel page.

Chan No:

The system channel designator.

Channel ID:

A description for the channel. Up to 16 characters may be entered.

NW ID:

Allows channels to be affiliated with a network (i.e. "1" is Police Network, "2" is Fire Network), to an antenna system ("1" is Tx Antenna #1, "2" is Tx Antenna #2), or to another label (i.e. "1" is 24x7 Maintenance, "2" is Normal Hours Maintenance) and this label will appear in Alarm Messages to allow faster determination of response priority and or actions.

Note: The NW ID column is only displayed if this feature is enabled in the *Configuration – User Data* screen.

ON:

This controls the scanning of the channel. If checked, the channel is included in the measurement cycle, otherwise it is not included. This allows the channel to remain configured, but to be removed from the measurement cycle if desired (i.e. if the channel has been disabled or temporarily removed).

Frequency:

The center frequency for the channel. The frequency must be a multiple of 0.00625 MHz.

Modulation:

Selects the modulation type to be measured.

Note: The channel measurement bandwidth is also selected in this field. Some modulation selections default the channel measurement bandwidth (i.e. "TETRA" defaults to a 25KHz setting), but if multiple selections are available, then this is easily identified by the modulation label (i.e. "FM12.5" is 12.5KHz, and "FM25" is 25KHz).

Threshold Pwr:

The minimum forward power level for which channel measurements and alarm status will be updated. If the detected power level is below this value the signal will be considered as not present.

Add Row:

When the configuration page is loaded, only configured channels are displayed. To configure a new channel, click the Add Row button to display the next available un-configured channel. Up to 20 channels may be configured for each Tx port.

Remove Selected Rows:

Clicking this button will return the selected rows to their default settings and remove them from the display. Rows are selected by clicking the checkbox at the left of the row. Clicking the checkbox in the title bar will select all the rows. Note that the first row is always displayed.

Note: For any text field, the allowable limits for that field (Model dependent) are displayed when the cursor is hovered over it.

Defaults:

Clicking this button reduces the display to only the first channel and enters the factory default values. for the Channel configuration settings. To only restore specific channels to defaults, select them, and then use the Remove Selected Rows button followed by the Add Row button. The default settings are;

Channel ID	"Not Defined"
ON	Not selected
Frequency	OFF
BW	25 kHz
Threshold Pwr	-120 dBm

Discard Changes:

Click this button to restore the values to those current saved. Note that if invalid values are being displayed after an Apply attempt, these values may not match the current system configuration. In this case, just select the Configure/User Data menu item again to re-display the current configuration.

Apply:

This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

Note: Whenever programming changes are applied, the alarm status for affected channels is re-initialized.

10.25 Configuration – Tx Port 1 Channels

Each of the Tx port channels (Groups), 1 through to 4 is configurable as illustrated in this Tx Port 1 Channel page.

Chan No:

The system channel designator.

Channel ID:

A description for the channel. Up to 16 characters may be entered.

NW ID:

Allows channels to be affiliated with a network (i.e. "1" is Police Network, "2" is Fire Network), to an antenna system ("1" is Tx Antenna #1, "2" is Tx Antenna #2), or to another label (i.e. "1" is 24x7 Maintenance, "2" is Normal Hours Maintenance) and this label will appear in Alarm Messages to allow faster determination of response priority and or actions.

Note: The NW ID column is only displayed if this feature is enabled in the *Configuration – User Data* screen.

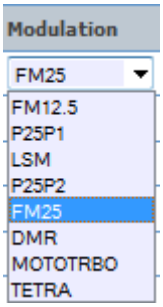
ON:

This controls the scanning of the channel. If checked, scanning is enabled, otherwise it is not included in the scanning cycle. This allows the channel to remain configured, but to be temporarily removed from the scanning cycle.

Frequency:

The center frequency for the channel. The frequency must be a multiple of 0.00625 MHz.

Modulation:



Selects the modulation type to be measured.

Note: The channel measurement bandwidth is also selected in this field. Some modulation selections default the channel measurement bandwidth (i.e. "TETRA" defaults to a 25KHz setting), but if multiple selections are available, then this is easily identified by the modulation label (i.e. "FM12.5" is 12.5KHz, and "FM25" is 25KHz).

Threshold Pwr:

The minimum forward power level for which channel measurements and alarm status will be updated. If the detected power level is below this value the signal will be considered as not present.

Note: The default value for this field is "35dBm" which caters for most applications. Alternate values to suit special applications should be entered against specific channels as required.

Add Row:

When the configuration page is loaded, only configured channels are displayed. To configure a new channel, click the Add Row button to display the next available un-configured channel. Up to 20 channels may be configured for each Tx port.

Note: If more than 20 channelsare required to be configured as sampled by one Antenna Line Coupler (ALC), enter the additional channels into Tx Port 2 (and/or Tx Port 3 and/or Tx Port 4) channel list(s).
In the *Calibration – Tx Ports* pages, enter the same Forward and Reverse Coupling values into the respective ports' calibration pages as has been calibrated on the *Calibration - Tx Port 1* page.
For example, 37 channels could be monitored in one Tx combiner, via one ALC, by entering the first 20 frequencies against Tx Port 1, and the remaining 17 frequencies against Tx Port 2. The Forward and Reverse Coupling values determined in the *Calibration - Tx Port 1* page should be copied and applied to the *Calibration - Tx Port 2* page.

Remove Selected Rows:

Clicking this button will return the selected rows to their default settings and remove them from the display. Rows are selected by clicking the checkbox at the left of the row. Clicking the checkbox in the title bar will select all the rows. Note that the first row is always displayed.

Note: For any text field, the allowable limits for that field (Model dependent) are displayed when the cursor is hovered over it.

Defaults:

Clicking this button reduces the display to only the first channel and enters the factory default values. for the Channel configuration settings. To only restore specific channels to defaults, select them, and then use the Remove Selected Rows button followed by the Add Row button. The default settings are;

Channel ID	"Not Defined"
ON	Not selected
Frequency	OFF
BW	25 kHz
Threshold Pwr	35 dBm

Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.

Note that if invalid values are being displayed after an Apply attempt, these values may not match the current system configuration. In this case, just select the relevant Configuration/Channels/Tx Port menu item again to re-display the current configuration.

Apply:

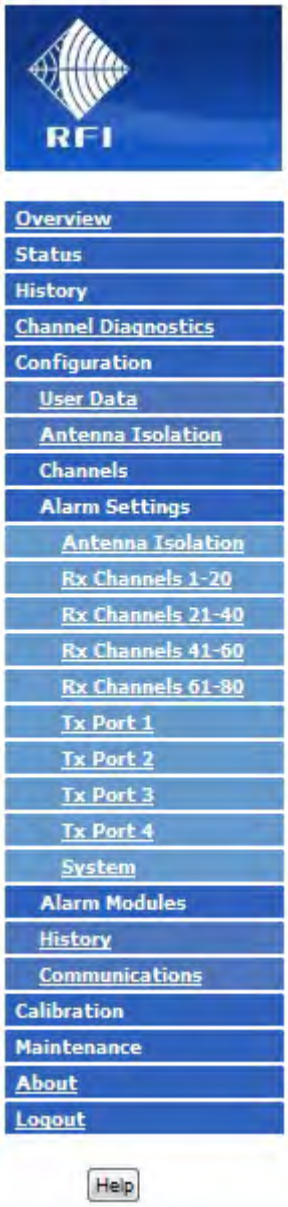
This will attempt to save and activate the values entered. If any out-of-range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

Note: Whenever programming changes are applied, the alarm status for affected channels is re-initialized.

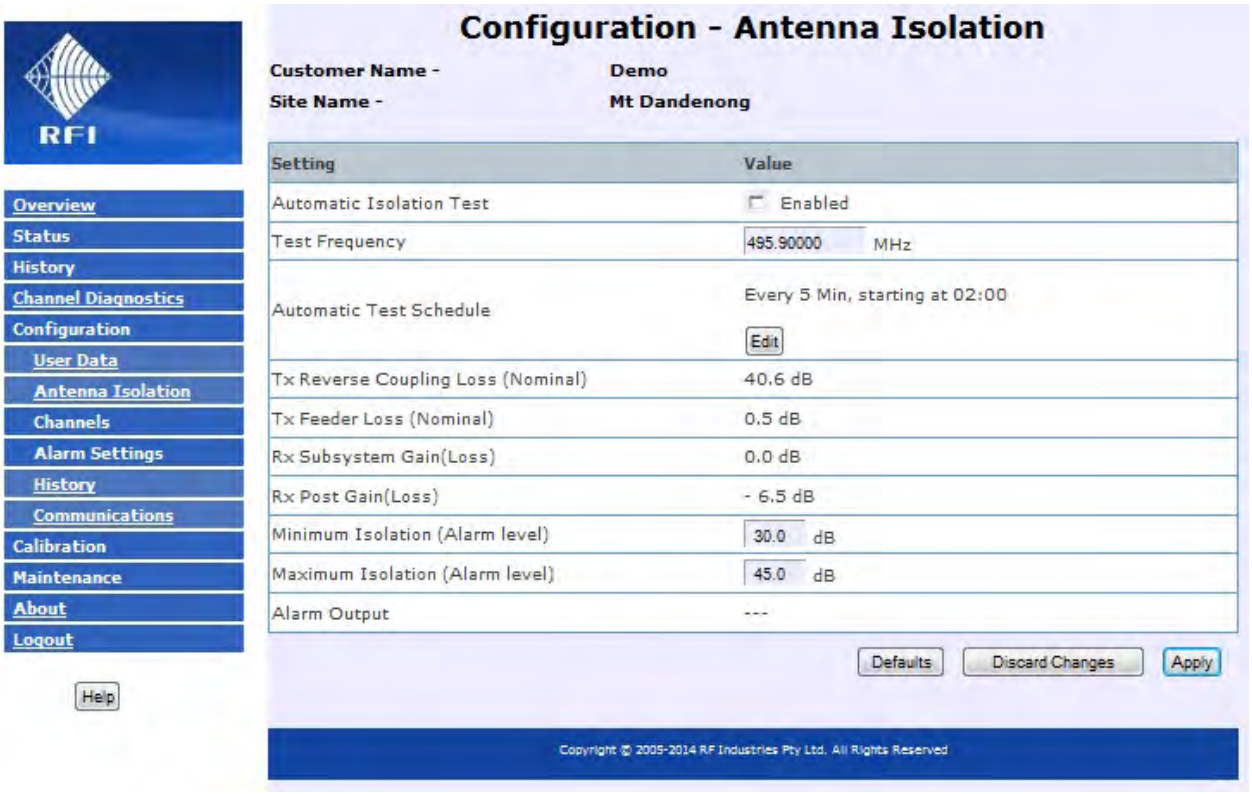
10.26 Configuration – Alarm Settings Menu

The "Configuration - Alarms" menu allows all of the ASMs alarm parameters to be programmed.

Selecting each indented topic under "Alarm Settings" will display that item as a separate display page.

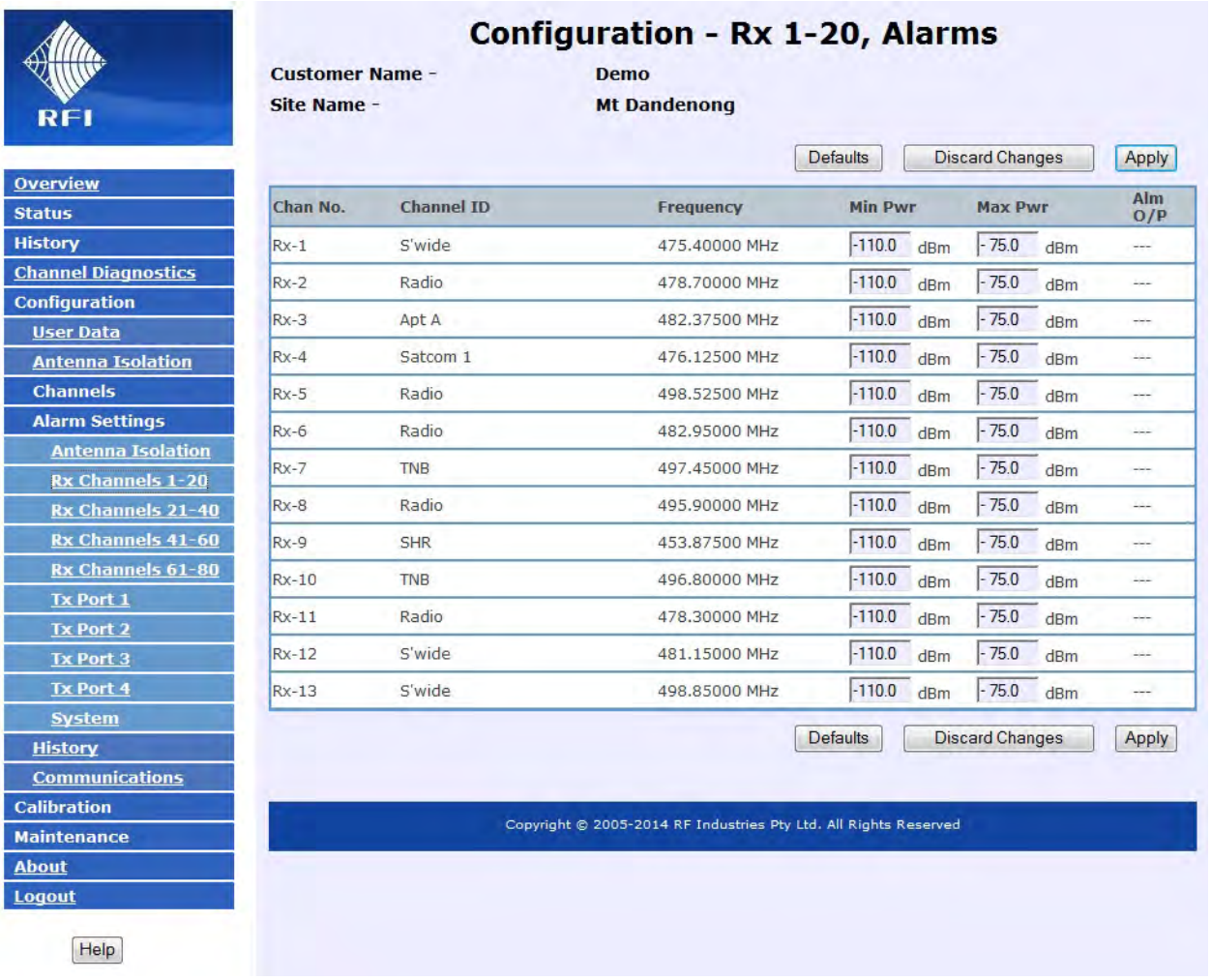


10.27 Configuration – Alarm Settings - Antenna Isolation



The *Configuration – Alarm Settings – Antenna Isolation* page is the same as the *Configuration – Antenna Isolation* page. Refer Section 10.22 of this manual for detailed information on this page.

10.28 Configuration – Alarm Settings – Rx Channels


RFI
Overview
Status
History
Channel Diagnostics
Configuration
User Data
Antenna Isolation
Channels
Alarm Settings
Antenna Isolation
Rx Channels 1-20
Rx Channels 21-40
Rx Channels 41-60
Rx Channels 61-80
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
System
History
Communications
Calibration
Maintenance
About
Logout
Help
Configuration - Rx 1-20, Alarms
Customer Name - Demo
Site Name - Mt Dandenong
Defaults
Discard Changes
Apply
Chan No. | Channel ID | Frequency | Min Pwr | Max Pwr | Alm O/P
Rx-1 | S'wide | 475.40000 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-2 | Radio | 478.70000 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-3 | Apt A | 482.37500 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-4 | Satcom 1 | 476.12500 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-5 | Radio | 498.52500 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-6 | Radio | 482.95000 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-7 | TNB | 497.45000 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-8 | Radio | 495.90000 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-9 | SHR | 453.87500 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-10 | TNB | 496.80000 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-11 | Radio | 478.30000 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-12 | S'wide | 481.15000 MHz | -110.0 dBm | - 75.0 dBm | ---
Rx-13 | S'wide | 498.85000 MHz | -110.0 dBm | - 75.0 dBm | ---
Defaults
Discard Changes
Apply
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Each of the Rx channel alarms is configurable as illustrated in this Rx Channels 1-20 Alarms page.

Min Pwr and Max Pwr:

Sets the power level limits for alarming of the monitored Rx channels. A signal detected outside these limits will result in an alarm.

Note: Setting the Min Pwr to -120dBm will disable low level alarms. However, setting Min Pwr between -120dBm and the ASMs minimum sensitivity measurement level (-110dBm) may result in unpredictable alarm behavior for Rx levels within this range.

Note: For any text field, the allowable limits for that field (model dependent) are displayed when the cursor is hovered over it. Alarms will only be raised for signals where the Received Power level exceeds the Threshold Power set on the Channel Configuration pages.

ALM O/P:

The Alarm Output that this channel's Min. Pwr or Max. Pwr alarm has been assigned to.

Note: This is configured in the *Configuration – Alarm Settings – System* or *Configuration – Alarm Modules* screens as required.

Defaults:

Clicking this button enters the factory default values for the Channel alarm settings, which are;

Min Power	-110dBm
Max Pwr	-75dBm

Discard Changes:

Click this button to restore the values to those present when the page was last displayed.

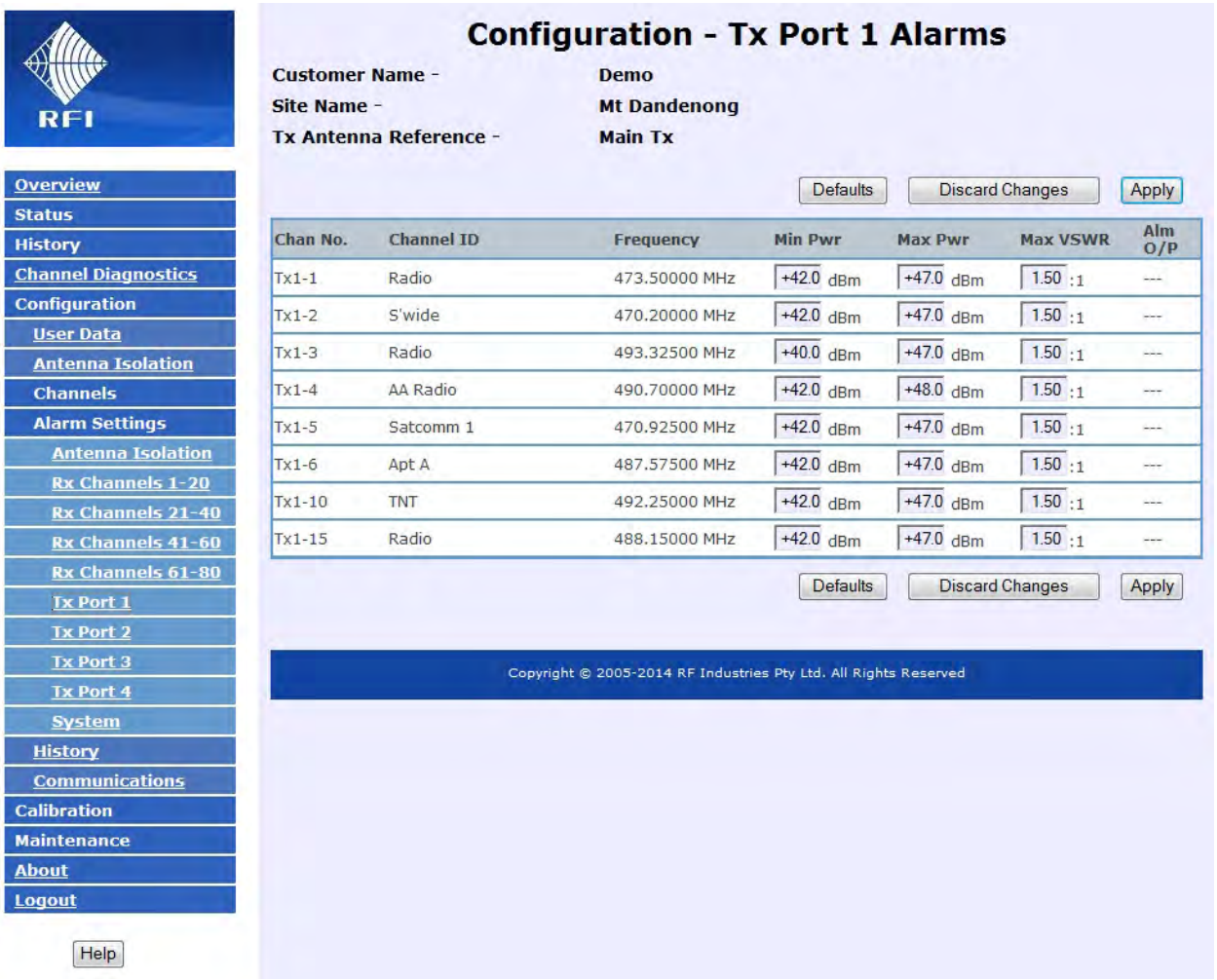
Note: If invalid values are being displayed after an Apply attempt, these values may not match the current system configuration. In this case, just select the relevant *Configuration/Alarms/Rx Channels* menu item again to re-display the current configuration.

Apply:

This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

Note: Whenever any configuration changes are applied, the alarm status for affected channels is re-initialised.

10.29 Configuration – Alarm Settings -Tx Port 1 Alarms


Configuration - Tx Port 1 Alarms
Customer Name - Demo
Site Name - Mt Dandenong
Tx Antenna Reference - Main Tx
Defaults
Discard Changes
Apply
Chan No. | Channel ID | Frequency | Min Pwr | Max Pwr | Max VSWR | Alm O/P
Tx1-1 | Radio | 473.50000 MHz | +42.0 dBm | +47.0 dBm | 1.50 :1 | ---
Tx1-2 | S'wide | 470.20000 MHz | +42.0 dBm | +47.0 dBm | 1.50 :1 | ---
Tx1-3 | Radio | 493.32500 MHz | +40.0 dBm | +47.0 dBm | 1.50 :1 | ---
Tx1-4 | AA Radio | 490.70000 MHz | +42.0 dBm | +48.0 dBm | 1.50 :1 | ---
Tx1-5 | Satcomm 1 | 470.92500 MHz | +42.0 dBm | +47.0 dBm | 1.50 :1 | ---
Tx1-6 | Apt A | 487.57500 MHz | +42.0 dBm | +47.0 dBm | 1.50 :1 | ---
Tx1-10 | TNT | 492.25000 MHz | +42.0 dBm | +47.0 dBm | 1.50 :1 | ---
Tx1-15 | Radio | 488.15000 MHz | +42.0 dBm | +47.0 dBm | 1.50 :1 | ---
Defaults
Discard Changes
Apply
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Overview
Status
History
Channel Diagnostics
Configuration
User Data
Antenna Isolation
Channels
Alarm Settings
Antenna Isolation
Rx Channels 1-20
Rx Channels 21-40
Rx Channels 41-60
Rx Channels 61-80
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
System
History
Communications
Calibration
Maintenance
About
Logout
Help

Each of the Tx port (Groups) channel alarms, 1 through to 4 is configurable as illustrated in this Tx Port 1 Alarms page.

Min & Max Power:

Sets the power level limits for alarming of the monitored Tx channels. A signal detected outside these limits will result in an alarm.

Max VSWR:

Sets the VSWR alarm limit.

ALM O/P:

The Alarm Output that this channel's Min. Pwr or Max. Pwr alarm has been assigned to.

Note: This is configured in the *Configuration – Alarm Settings – System* or *Configuration – Alarm Modules* screens as required.

Note: For any text field, the allowable limits for that field (Model dependent) are displayed when the cursor is hovered over it.

Note: Alarms will only be raised for signals where the Forward Power level exceeds the Threshold Power set on the Channel Configuration pages.

Defaults:

Clicking this button enters the factory default values for the Channel alarm settings, which are:

Min Power	+42 dBm
Max Power	+49 dBm
Max Ins Loss	1.0 dB
Max VSWR	1.50:1

Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.

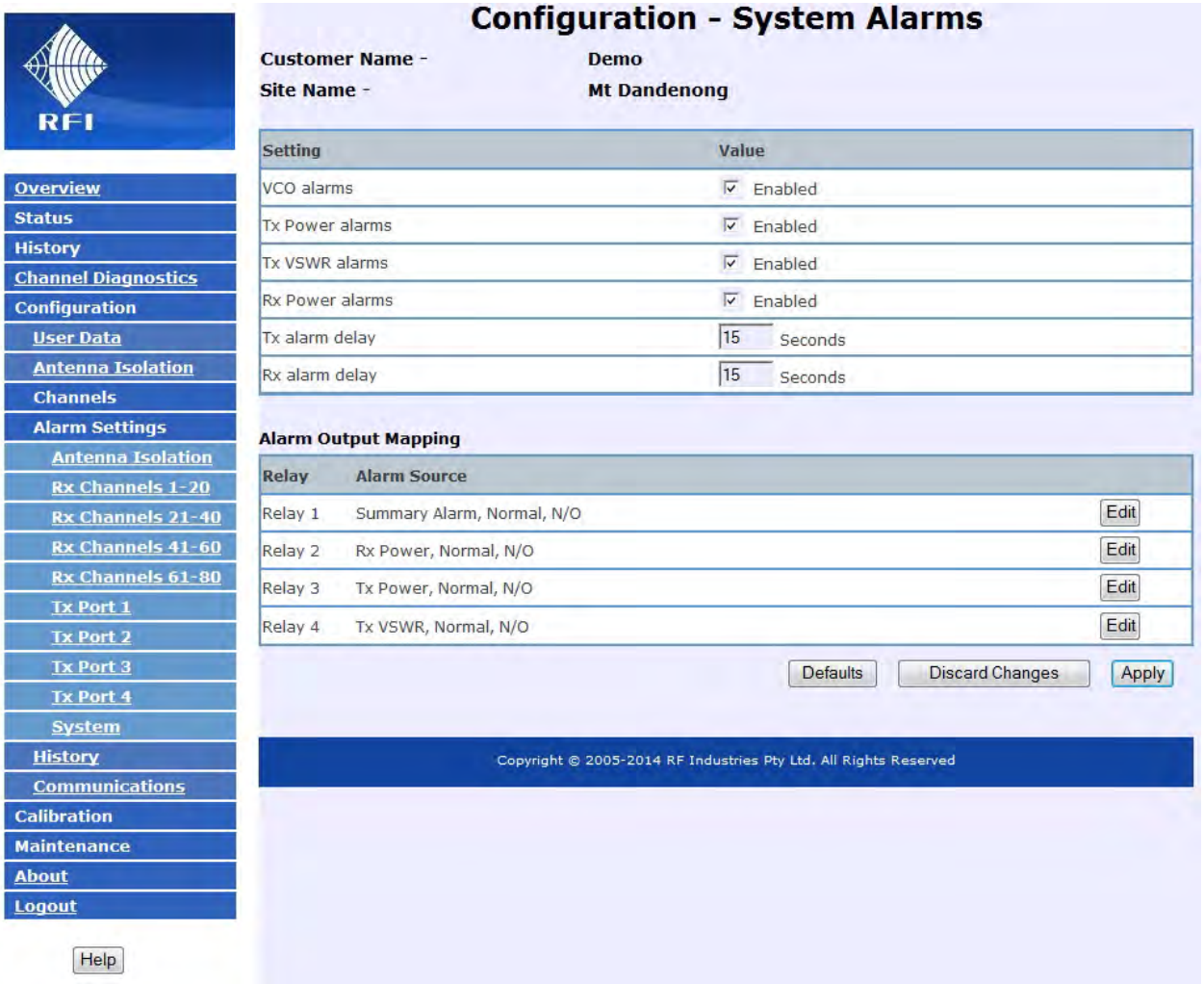
Note that if invalid values are being displayed after an Apply attempt, these values may not match the current system configuration. In this case, just select the relevant Configuration/Alarms/Tx Port menu item again to re-display the current configuration.

Apply:

This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

Note: Whenever programming changes are applied, the alarm status for affected channels is re-initialized.

10.30 Configuration – Alarm Settings – System



These settings allow various alarm categories to be disabled. Note that disabling an alarm category only suppresses activation of the relevant alarm relays. For example if Tx Power alarms are disabled, the Tx Power alarm relay, and the Summary alarm relay will not activate when the Tx Forward power level is outside the configured limits. However, the alarm status LEDS will continue to operate normally, and the user interface will still display the relevant alarms.

VCO alarms:

When selected, a VCO alarm is raised when either of the ASM unit's VCOs fail to frequency lock.

Tx Power alarms:

When selected, this alarm occurs when the Forward Power level for a Tx channel is outside the configured Min & Max power alarm limits or when the Combiner Insertion Loss exceeds the configured alarm limit.

Tx VSWR alarms:

When selected, this alarm occurs when the VSWR for a Tx channel is greater than the configured limit.

Rx Power alarms:

When selected, this alarm occurs when the Forward Power level for a Tx channel is outside the configured Min & Max power alarm limits or when the Combiner Insertion Loss exceeds the configured alarm limit.

Tx alarm delay:

This setting defines the length of time (in seconds) for which the alarm must be continuously present or restored before the change in alarm status is recognized.

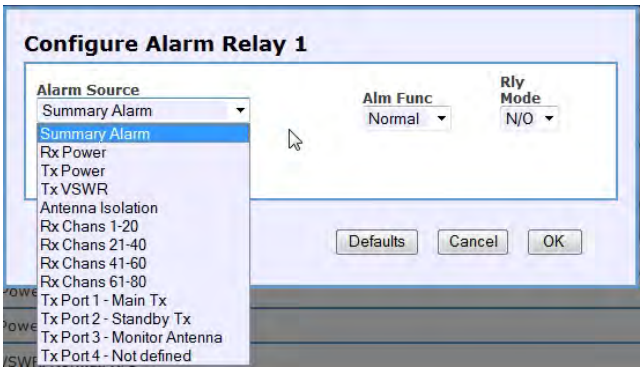
Rx alarm delay:

This setting defines the length of time (in seconds) for which the alarm must be continuously present or restored before the change in alarm status is recognized.

Alarm Output Mapping

These selections allow the four relays available on the ASM's rear panel DB15 connect to be mapped to a choice selectable from the System's Summary, Antenna Isolation, Rx Channel or Tx Channel alarms.

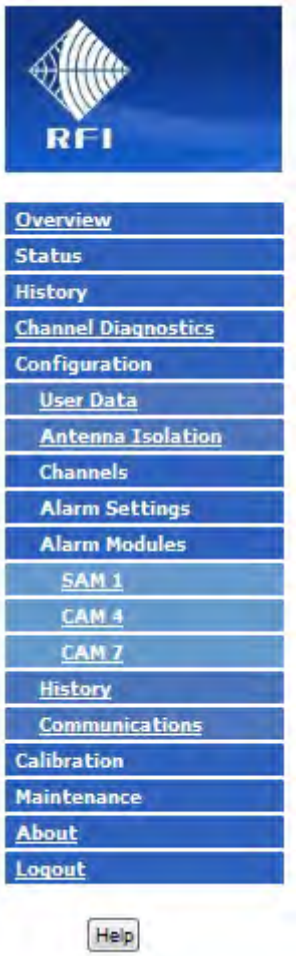
For each alarm selected and assigned, the relay can be configured for Normal, Inactive, Active or Latching actions, with either a Normally Operated or or Normally Released state selectable.



Defaults:

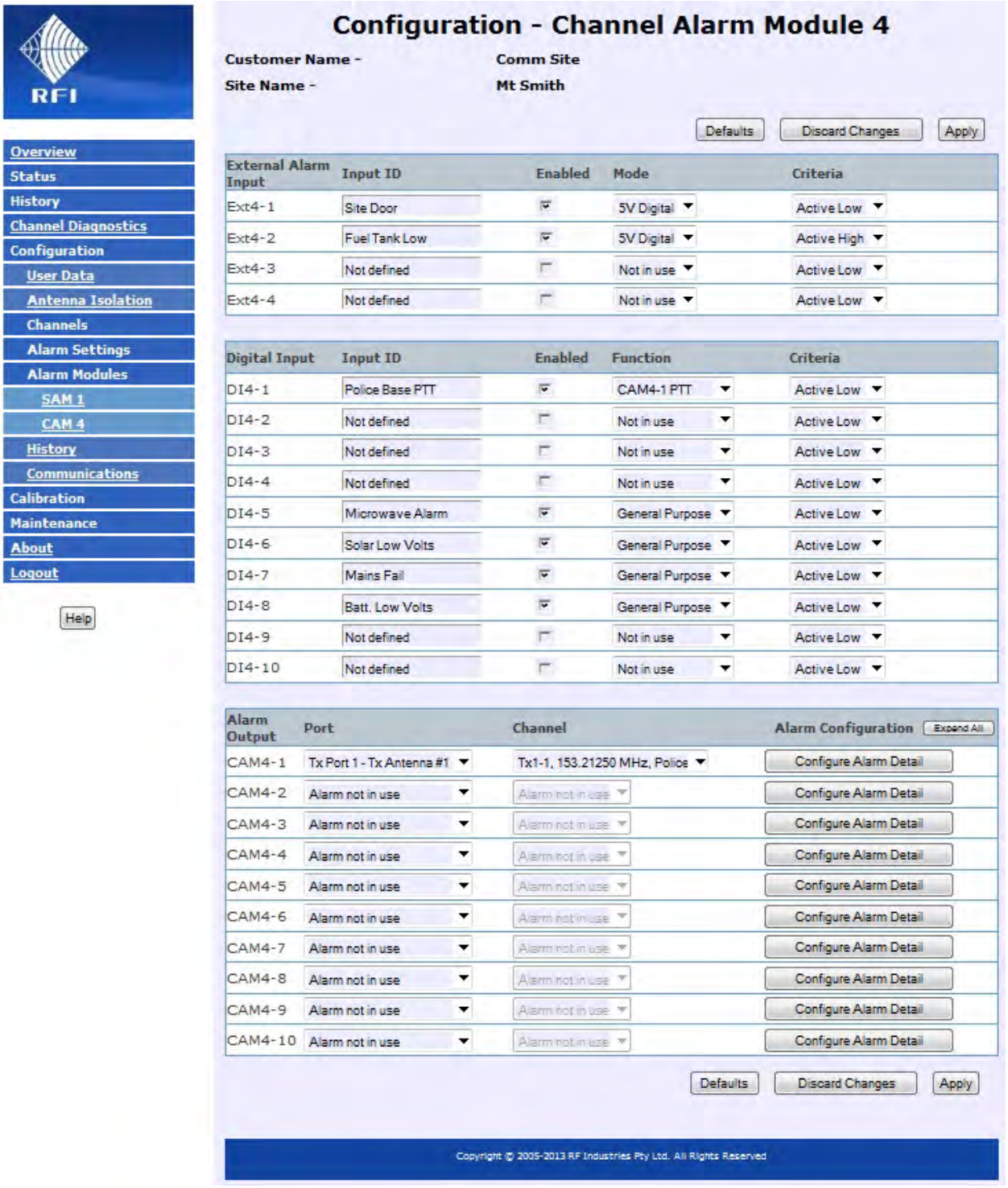
This will enable all alarm categories. The Tx alarm and Rx alarm delays will be set to 15 Seconds, and the four relay outputs will be set to the respective System Summary selections.

10.31 Configuration – Alarm Modules - Menu



Note: The *Configuration - Alarm Modules* menu item appears only if one or more (optional) Channel Alarm Module (CAM) is installed. Up to ten (10) CAM/SAM units may be fitted to each ASM as required.

10.32 Configuration – Channel Alarm Module


RFI
Overview
Status
History
Channel Diagnostics
Configuration
User Data
Antenna Isolation
Channels
Alarm Settings
Alarm Modules
SAM 1
CAM 4
History
Communications
Calibration
Maintenance
About
Logout
Help
Configuration - Channel Alarm Module 4
Customer Name - Comm Site
Site Name - Mt Smith
Defaults
Discard Changes
Apply
External Alarm Input
Input ID
Enabled
Mode
Criteria
Ext4-1 Site Door 5V Digital Active Low
Ext4-2 Fuel Tank Low 5V Digital Active High
Ext4-3 Not defined Not in use Active Low
Ext4-4 Not defined Not in use Active Low
Digital Input
Input ID
Enabled
Function
Criteria
DI4-1 Police Base PTT CAM4-1 PTT Active Low
DI4-2 Not defined Not in use Active Low
DI4-3 Not defined Not in use Active Low
DI4-4 Not defined Not in use Active Low
DI4-5 Microwave Alarm General Purpose Active Low
DI4-6 Solar Low Volts General Purpose Active Low
DI4-7 Mains Fail General Purpose Active Low
DI4-8 Batt. Low Volts General Purpose Active Low
DI4-9 Not defined Not in use Active Low
DI4-10 Not defined Not in use Active Low
Alarm Output
Port
Channel
Alarm Configuration
Expand All
CAM4-1 Tx Port 1 - Tx Antenna #1 Tx1-1, 153.21250 MHz, Police Configure Alarm Detail
CAM4-2 Alarm not in use Configure Alarm Detail
CAM4-3 Alarm not in use Configure Alarm Detail
CAM4-4 Alarm not in use Configure Alarm Detail
CAM4-5 Alarm not in use Configure Alarm Detail
CAM4-6 Alarm not in use Configure Alarm Detail
CAM4-7 Alarm not in use Configure Alarm Detail
CAM4-8 Alarm not in use Configure Alarm Detail
CAM4-9 Alarm not in use Configure Alarm Detail
CAM4-10 Alarm not in use Configure Alarm Detail
Defaults
Discard Changes
Apply
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Each of the (optional) Channel Alarm Module (CAM) units fitted to the ASM is configurable as illustrated in this "*Configuration - Channel Alarm Module*" page.

External Alarm Input	Input ID	Enabled	Mode	Criteria
Ext4-1	Site Door	☑	5V Digital	Active Low
Ext4-2	Fuel Tank Low	☑	5V Digital	Active High
Ext4-3	Not defined	☐	Not in use	Active Low
Ext4-4	Not defined	☐	Not in use	Active Low

External Alarm Input:

Displays the four (4) configurable external digital inputs.

Input ID:

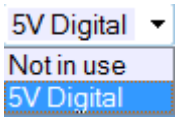
Enter a description for the External Alarm input signals. Up to 16 characters may be entered.

Enabled:

If the input is Enabled, an alarm condition will result in a System Fault summary alarm, together with an indication on the System Status page. Its status will also be displayed on the associated SAM/CAM Status page.

Mode:

Select the input mode for the external input.



Criteria:

Select the input state (LOW or HIGH) that signals an alarm condition for each External Input.

Digital Input	Input ID	Enabled	Function	Criteria
DI4-1	Police Base PTT	☑	CAM4-1 PTT	Active Low
DI4-2	Not defined	☐	Not in use	Active Low
DI4-3	Not defined	☐	Not in use	Active Low
DI4-4	Not defined	☐	Not in use	Active Low
DI4-5	Microwave Alarm	☑	General Purpose	Active Low
DI4-6	Solar Low Volts	☑	General Purpose	Active Low
DI4-7	Mains Fail	☑	General Purpose	Active Low
DI4-8	Batt. Low Volts	☑	General Purpose	Active Low
DI4-9	Not defined	☐	Not in use	Active Low
DI4-10	Not defined	☐	Not in use	Active Low

Digital Input:

Displays the ten (10) configurable digital inputs.

Input ID:

Enter a description for the digital alarm signal. Up to 16 characters may be entered.

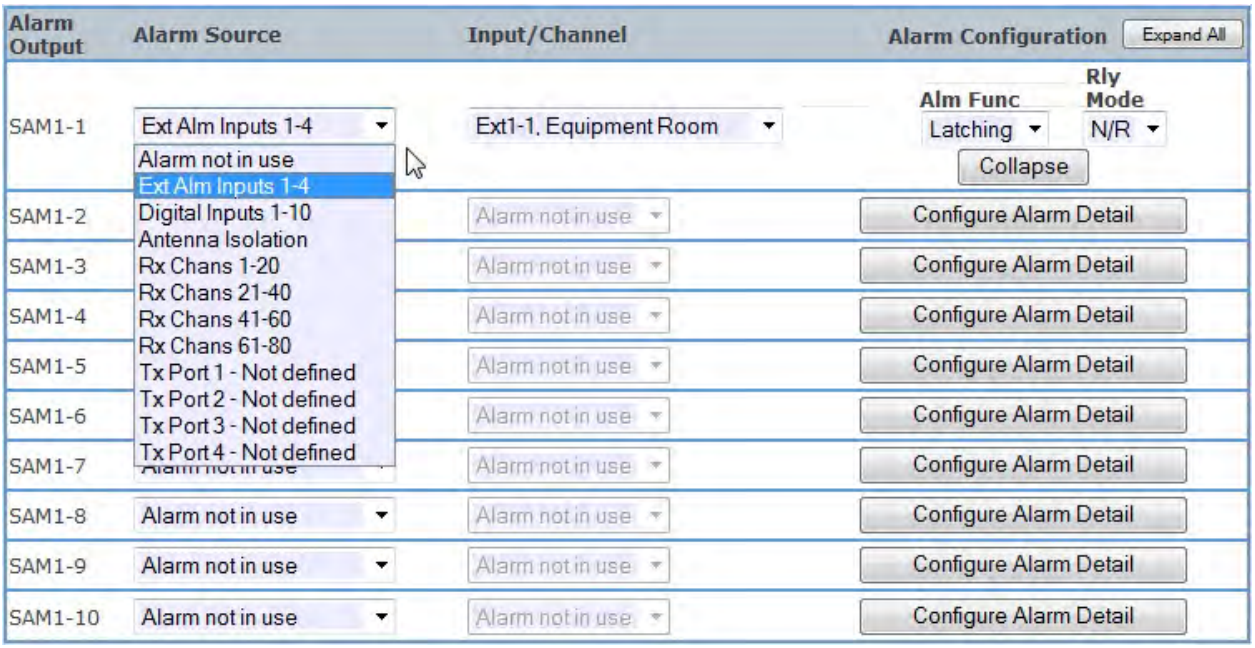
Function:

Select the input mode for each of the Digital Inputs.
A "CAM" selection affiliates the digital input as a base station PTT monitoring line for the base station assigned to that CAM Alarm Relay Output (see below). A "General Purpose" selection identifies the Digital Input as an independent digital input for monitoring external equipment, etc

When the Function input is enabled, it is used instead of the Threshold Power Level (configured on the Tx Port Channel Configuration page) to determine if the alarmed parameter should be measured. If used with the transmitter's PTT line, even if the transmitter produces no RF output, but the PTT line activation is present, an alarm condition can be determined. If the Threshold Power Level value was used instead, no RF level would be detected above the threshold level, so no measurements (or resulting alarm states) would occur.

Criteria:

Select the input state (LOW or HIGH) that signals an alarm condition.



Alarm Output:

These 10 rows configure the individual Alarm Source, Input/Channel, PTT input, and Alarm Configuration settings. Selecting the *Configure Alarm Detail* button on each row expands its display (refer above example). Selecting the *Collapse* button minimises the row display.

Alarm Source:

Either select the source for the alarm output, or select "Alarm not in use" to disable the alarm.

Input/Channel:

Having selected the Alarm Source, select the Input or Channel from that source that is to be assigned to the SAM/CAM alarm output.

Alarm Configuration:

Clr:

Any alarm output that is active in a "latched" state can only be unlatched by checking the associated "CLR" box on this GUI page.

Alarm Func:

The following options are available:

Normal – The alarm relay is controlled by the channel alarm status.

Inactive – The alarm relay is forced to the "no alarm" state for testing.

Active – The alarm relay is forced to its "alarm" state for testing.

Latching – The alarm relay is "latched" by an instance of the alarm state, and remains in this position until unlatched by manually selecting the adjacent *Clr* box.

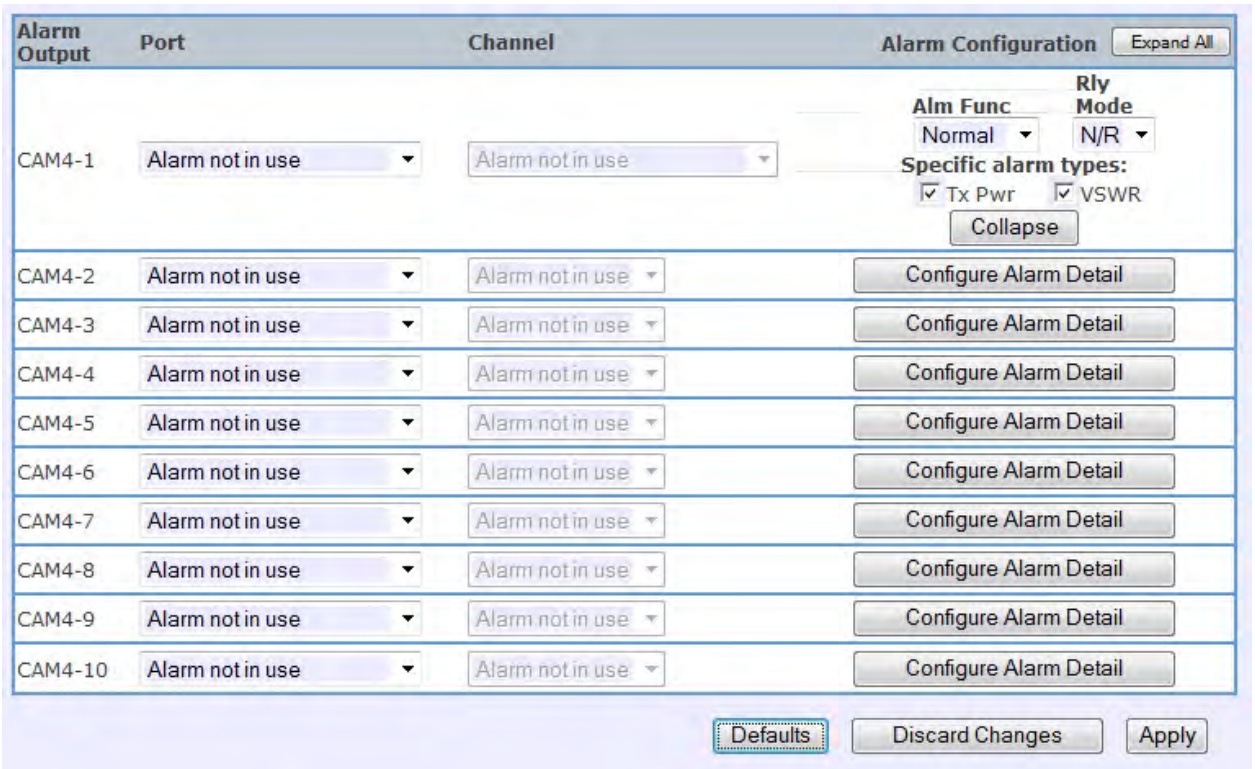
Note: When an alarm is current, the border of the *Configure Alarm Detail* button will be red, and when the Channel is expanded, the *Alm Func* box will also be red (refer above example).

Rly Mode:

The Relay Mode may be either Normally Released (N/R), i.e. it "operates" when an alarm is present, or Normally Operated (N/O), i.e. it "releases" when an alarm is present.

Specific Alarm Types:

If a Tx Channel is selected as the alarm source, either Tx Power or VSWR (or both) alarm conditions on the affiliated ASM Tx channel will initiate an alarm output condition on this CAM channel. Other selections will appear for other alarm source selections.



Defaults:

Clicking this button restores the factory default values which are:

Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.

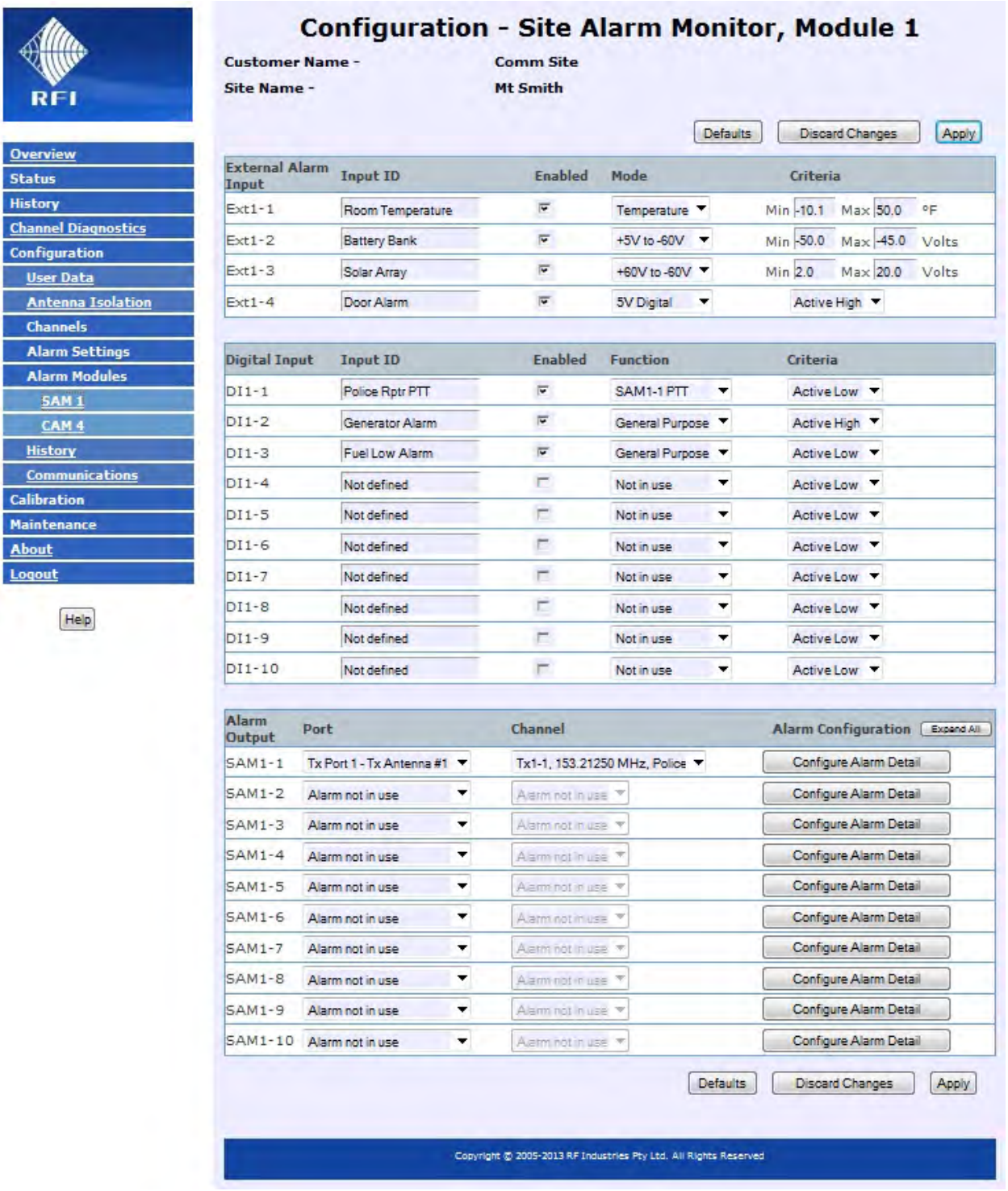
Note that if invalid values are being displayed after an Apply attempt, these values may not match the current system configuration. In this case, just select the relevant Configuration/Alarms/Tx Port menu item again to re-display the current configuration.

Apply:

This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

Note: Whenever programming changes are applied, the alarm status for affected channels is re-initialized.

10.33 Configuration – Site Alarm Module


Configuration - Site Alarm Monitor, Module 1
Customer Name - Comm Site
Site Name - Mt Smith
Defaults
Discard Changes
Apply
Overview
Status
History
Channel Diagnostics
Configuration
User Data
Antenna Isolation
Channels
Alarm Settings
Alarm Modules
SAM 1
CAM 4
History
Communications
Calibration
Maintenance
About
Logout
Help
External Alarm Input
Input ID
Enabled
Mode
Criteria
Ext1-1 Room Temperature Temperature Min -10.1 Max 50.0 °F
Ext1-2 Battery Bank +5V to -60V Min -50.0 Max -45.0 Volts
Ext1-3 Solar Array +60V to -60V Min 2.0 Max 20.0 Volts
Ext1-4 Door Alarm 5V Digital Active High
Digital Input
Input ID
Enabled
Function
Criteria
DI1-1 Police Rptr PTT SAM1-1 PTT Active Low
DI1-2 Generator Alarm General Purpose Active High
DI1-3 Fuel Low Alarm General Purpose Active Low
DI1-4 Not defined Not in use Active Low
DI1-5 Not defined Not in use Active Low
DI1-6 Not defined Not in use Active Low
DI1-7 Not defined Not in use Active Low
DI1-8 Not defined Not in use Active Low
DI1-9 Not defined Not in use Active Low
DI1-10 Not defined Not in use Active Low
Alarm Output
Port
Channel
Alarm Configuration
Expand All
SAM1-1 Tx Port 1 - Tx Antenna #1 Tx1-1, 153.21250 MHz, Police Configure Alarm Detail
SAM1-2 Alarm not in use Configure Alarm Detail
SAM1-3 Alarm not in use Configure Alarm Detail
SAM1-4 Alarm not in use Configure Alarm Detail
SAM1-5 Alarm not in use Configure Alarm Detail
SAM1-6 Alarm not in use Configure Alarm Detail
SAM1-7 Alarm not in use Configure Alarm Detail
SAM1-8 Alarm not in use Configure Alarm Detail
SAM1-9 Alarm not in use Configure Alarm Detail
SAM1-10 Alarm not in use Configure Alarm Detail
Defaults
Discard Changes
Apply
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Each of the (optional) Site Alarm Module (SAM) units fitted to the ASM is configurable as illustrated in this "*Configuration - Site Alarm Module*" page.

External Alarm Input	Input ID	Enabled	Mode	Criteria
Ext1-1	Room Temperature	☑	Temperature	Min -10.1 Max 50.0 °F
Ext1-2	Battery Bank	☑	+5V to -60V	Min -50.0 Max -45.0 Volts
Ext1-3	Solar Array	☑	+60V to -60V	Min 2.0 Max 20.0 Volts
Ext1-4	Door Alarm	☑	5V Digital	Active High

External Alarm Input:

Displays the four (4) configurable external temperature/analogue/digital inputs.

Input ID:

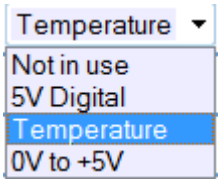
Enter a description for the External Alarm input signals. Up to 16 characters may be entered.

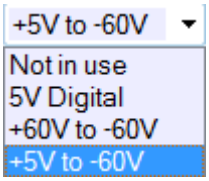
Enabled:

If the input is Enabled, an alarm condition will result in a System Fault summary alarm, together with an indication on the System Status page. Its status will also be displayed on the associated SAM Status page.

Mode:

Select the input mode for the external input. Ext1 may select from temperature/analogue/digital, and Ext2, Ext3 and Ext 4 may be selected from analogue/digital





Criteria:

Set the alarm threshold limits or input state (LOW or HIGH) that signals an alarm condition for each External Input.

Digital Input	Input ID	Enabled	Function	Criteria
DI4-1	Police Base PTT	☑	CAM4-1 PTT	Active Low
DI4-2	Not defined	☐	Not in use	Active Low
DI4-3	Not defined	☐	Not in use	Active Low
DI4-4	Not defined	☐	Not in use	Active Low
DI4-5	Microwave Alarm	☑	General Purpose	Active Low
DI4-6	Solar Low Volts	☑	General Purpose	Active Low
DI4-7	Mains Fail	☑	General Purpose	Active Low
DI4-8	Batt. Low Volts	☑	General Purpose	Active Low
DI4-9	Not defined	☐	Not in use	Active Low
DI4-10	Not defined	☐	Not in use	Active Low

Digital Input:

Displays the ten (10) configurable digital inputs.

Input ID:

Enter a description for the digital alarm signal. Up to 16 characters may be entered.

Function:

Select the input mode for each of the Digital Inputs.
A "CAM" selection affiliates the digital input as a base station PTT monitoring line for the base station assigned to that CAM Alarm Relay Output (see below). A "General Purpose" selection identifies the Digital Input as an independent digital input for monitoring external equipment, etc

Criteria:

Select the input state (LOW or HIGH) that signals an alarm condition.

Alarm No.	Port	Channel	Alarm Configuration (Expand All)
CAM1-1	Tx Port 1 - ABLE Telecom	Tx1-1, 763.00625 MHz, Polic	Configure Alarm Detail
CAM1-2	Tx Port 2 - Port2	Tx2-4, 803.10000 MHz, Fire E	Clr ☐ Alm Func: Latching, Rly Mode: N/R, I/P Func: Disabled Specific alarm types: ☑ Tx Pwr ☑ VSWR Collapse
CAM1-3	Alarm not in use	Alarm not in use	Configure Alarm Detail
CAM1-4	Alarm not in use	Alarm not in use	Configure Alarm Detail
CAM1-5	Alarm not in use	Alarm not in use	Configure Alarm Detail
CAM1-6	Alarm not in use	Alarm not in use	Configure Alarm Detail
CAM1-7	Alarm not in use	Alarm not in use	Configure Alarm Detail
CAM1-8	Alarm not in use	Alarm not in use	Configure Alarm Detail
CAM1-9	Alarm not in use	Alarm not in use	Configure Alarm Detail
CAM1-10	Alarm not in use	Alarm not in use	Configure Alarm Detail

Alarm No:

These 10 rows configure the individual channel alarm outputs and PTT input settings. Selecting the *Configure Alarm Detail* button on each row expands its display (refer above example). Selecting the *Collapse* button minimises the row display.

Port:

Either select the Tx Port for the desired channel, or select "Alarm not in use" to disable the alarm.

Channel:

Having selected the Port, select the channel to be assigned to the CAM alarm.

Alarm Configuration:

Alarm Func:

The following options are available:

Normal – The alarm relay is controlled by the channel alarm status.

Inactive – The alarm relay is forced to the "no alarm" state for testing.

Active – The alarm relay is forced to its "alarm" state for testing.

Latching – The alarm relay is "latched" by an instance of the alarm state, and remains in this position until unlatched by manually selecting the adjacent *Clr* box.

Note: When an alarm is current, the border of the *Configure Alarm Detail* button will be red, and when the Channel is expanded, the *Alm Func* box will also be red (refer above example).

Rly Mode:

The Relay Mode may be either Normally Released (N/R), i.e. it "operates" when an alarm is present, or Normally Operated (N/O), i.e. it "releases" when an alarm is present.

I/P Func:

This selects the channel specific input function. An application for this feature is to use it with a PTT signal from the transmitter. The following options are available;

Disabled – The input is not used.

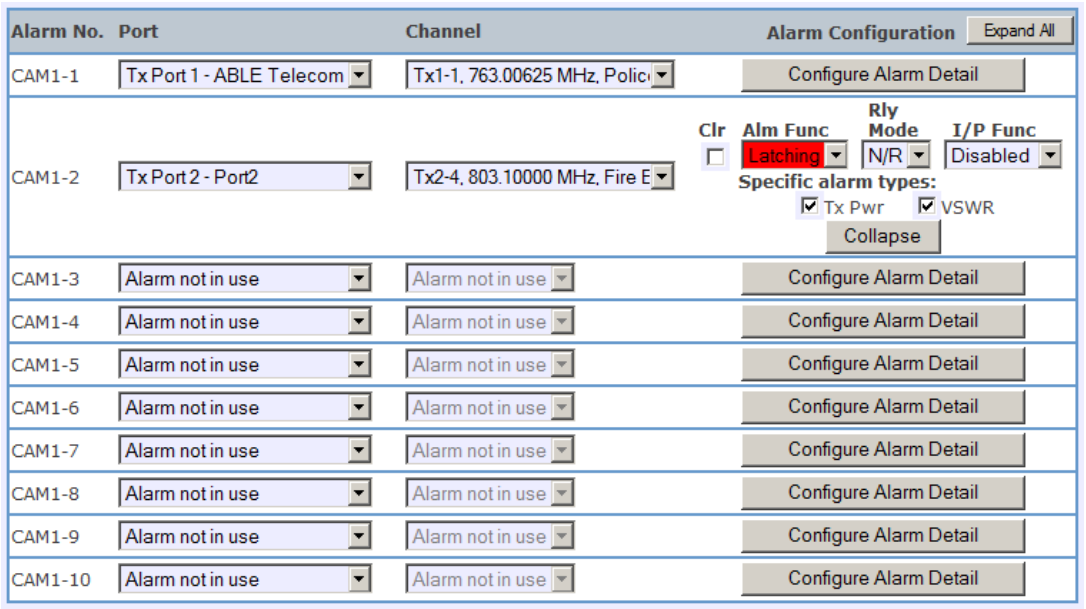
PTT Low – An active LOW or "0" input signal is required. (A LOW is defined as <2.5vdc)

PTT High – An active HIGH or "1" input signal is required. (A HIGH is defined as >2.5vdc)

When the I/P Func input is enabled, it is used instead of the Threshold Power Level (configured on the Tx Port Channel Configuration page) to determine if the alarmed parameter should be measured. If used with the transmitter's PTT line, even if the transmitter produces no RF output, but the PTT line activation is present, an alarm condition can be determined. If the Threshold Power Level value was used instead, no RF level would be detected above the threshold level, so no measurements (or resulting alarm states) would occur.

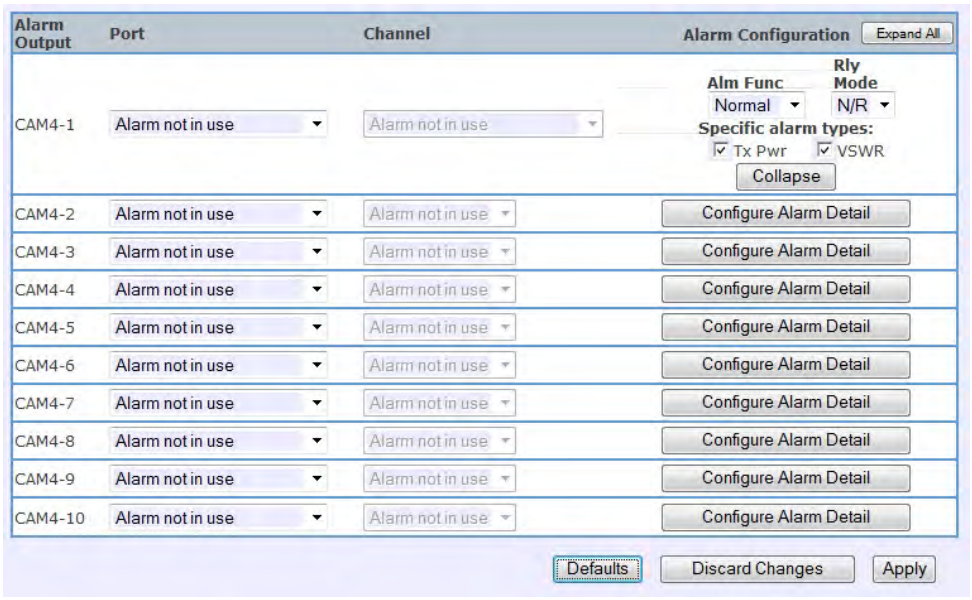
Specific Alarm Types:

When selected, either Tx Power or VSWR (or both) alarm conditions on the affiliated ASM Tx channel will initiate an alarm output condition on this CAM channel.


Alarm No.
Port
Channel
Alarm Configuration
Expand All
CAM1-1
Tx Port 1 - ABLE Telecom
Tx1-1, 763.00625 MHz, Polic
Configure Alarm Detail
CAM1-2
Tx Port 2 - Port2
Tx2-4, 803.10000 MHz, Fire E
Clr
Alm Func
Rly Mode
I/P Func
Latching
N/R
Disabled
Specific alarm types:
Tx Pwr
VSWR
Collapse
CAM1-3
CAM1-4
CAM1-5
CAM1-6
CAM1-7
CAM1-8
CAM1-9
CAM1-10
Alarm not in use
Configure Alarm Detail

Defaults:

Clicking this button restores the factory default values which are:



Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.

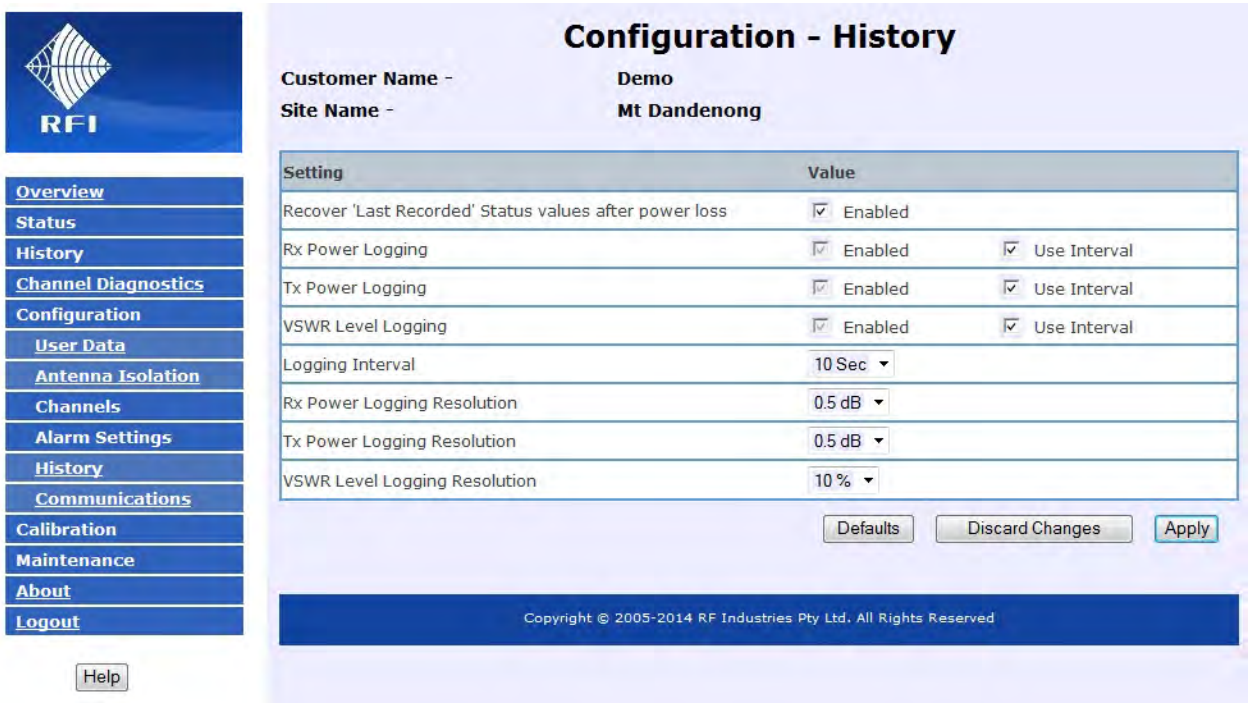
Note that if invalid values are being displayed after an Apply attempt, these values may not match the current system configuration. In this case, just select the relevant Configuration/Alarms/Tx Port menu item again to re-display the current configuration.

Apply:

This will attempt to save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

Note: Whenever programming changes are applied, the alarm status for affected channels is re-initialized.

10.34 Configuration – History



This page determines if measurements are logged into the ASM's data memory and the period at which these values are logged.

Recover "Last Recorded" Status values after power loss:

This Enables or Disables whether "last recorded values" are restored after a power outage, or whether values remain at their power on defaults until a valid measurement is made for each field.

Rx Power Logging:

This setting Enables or Disables the Rx power level logging. Disabling the logging at any time will not affect any data already captured.

Tx Power Logging:

This setting Enables or Disables the Tx power level logging. Disabling the logging at any time will not affect any data already captured.

VSWR Level Logging:

This setting Enables or Disables the VSWR power level logging. Disabling the logging at any time will not affect any data already captured.

Logging Interval:

This sets the interval between the logging snapshots. For example, if set to "10 sec", a snapshot of all the current levels is taken and saved every 10 seconds.

Use Interval:

After each of the *RX Power Logging*, *Tx Power Logging* and *VSWR Level Logging* fields there is a *Use Interval* selection box. If selected, each of the Logging activities will use the displayed *Logging Interval* value between log entries. If not selected, logging of the respective data will occur for every measurement cycle.

Rx Power Logging Resolution:

If the difference between the current Rx level and the last level logged is less than this value, a new record will not be written to the history data files. Higher values will make it less likely that a new data record will be required. This may greatly increase the total period of time for which data can be stored in the available data memory space.

Tx Power Logging Resolution:

If the difference between the current Tx power level and the last level logged is less than this value, a new record will not be written to the history data files. Higher values will make it less likely that a new data record will be required. This may greatly increase the total period of time for which data can be stored in the available data memory space.

VSWR Logging Resolution:

If the difference between the current VSWR value and the last level logged is less than this value, a new record will not be written to the history data files. Higher values will make it less likely that a new data record will be required. This may greatly increase the total period of time for which data can be stored in the available data memory space.

Defaults:

Clicking this button selects the factory default values which are:

Setting	Value
Recover 'Last Recorded' Status values after power loss	☑ Enabled
Rx Power Logging	☑ Enabled
Tx Power Logging	☑ Enabled
VSWR Level Logging	☑ Enabled
Logging Interval	10 Sec
Rx Power Logging Resolution	0.5 dB
Tx Power Logging Resolution	0.5 dB
VSWR Level Logging Resolution	10 %

Clicking *Apply* then saves these values into the ASM, or *Discard Changes* restores these values to their previous settings.

Discard Channels:

Click this button to restore the values to those present when the page was last re-displayed.

Apply:

This will apply the values entered.

10.35 Configuration – Communications

Ethernet

DHCP:

If enabled, the unit will attempt to get its IP Address, Subnet Mask and Gateway settings from a DHCP server. If no DHCP server is found, the configured settings will be used. If not enabled, the configured settings will always be used.

IP Address:

The IP address for this unit.

Subnet Mask:

The network address mask to be used.

Gateway:

The address of the network gateway to be used.

Email

Summary system status messages:

Selects if *System summary status messages* are to be sent via email.

Detailed channel status messages:

Selects if *Detailed channel status messages* are to be sent by email.

SMTP Server Listening Port:

Sets the port number used by the SMTP server. Commonly this will be Port 25, 2525 or 587. The IP connection to the ASM must support access to the required IP Port. Email service providers can provide their email server Listening Port address if it is not already known.

SMTP Server Login Username:

When the email service being used to handle emails required login authentication, enter the account Username in this field. The entry should be the same as would otherwise be used if logging into that email service directly (i.e. "scott@gmail.com" for Gmail™ or "rfiASMalarms" for Jango™).

SMTP Server Login Password:

When the email service being used to handle emails required login authentication, enter the account Password in this field. The entry should be the same as would otherwise be used if logging into that email service directly (i.e. "scott123!" for Gmail™ or "rfiASMalarms" for Jango™). Ticking the *Reveal* box will display the password entered.

From Email Address:

Sets the email address that this unit will appear as in email messages. This must be a name in a valid email address format (i.e. xxxx@yyyyy.com etc).

Destination Email Address(es):

Sets the email address(es) that this unit will send email messages to. (up to 4 addresses may be used)

Note: Access to certain email addresses may be restricted by the SMTP Server being used. Emails to outside email addresses are generally not allowed by organisations' own email servers. At this time, this SMTP Email Alarms feature does not support the SSL authentication or encryption requirements that some email servers may require.

SNMP

Send Alarm Notifications (Traps):

Selects if sending SNMP Traps are enabled or disabled.

SNMP Manager IP Address:

Selects the IP address that SNMP notifications (SNMP V2c Northbound Traps) will be sent to. Both a Primary and Secondary address may be used if required for redundant SNMP server configurations.

SNMP Manager Listening Port:

Selects the port number used by the SNMP Manager. Both a Primary and Secondary address may be used if required for redundant SNMP server configurations.

Note: SNMP MIB files for the ASM are available from RFI.

Defaults:

Clicking this button enters the factory default values for the Communications settings, which are:

DHCP	Disabled
IP Address	192.168.1.200
Subnet Mask	255.255.255.0
Gateway	192.168.1.254

Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.

Note that if invalid values are being displayed after a Save attempt, these values may not match the current repeater configuration. In this case, just select the *Configure/Communications* menu item again to re-display the current configuration.

Save:

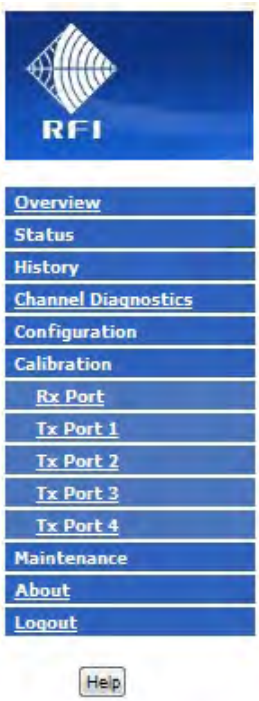
This will attempt to save the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

Note: Unlike the other configuration pages, this will not Activate (or "apply") the Ethernet settings if they have been changed. Ethernet changes can only be activated by restarting the ASM unit, either by cycling the power, or through the *Maintenance/Restart* menu item.

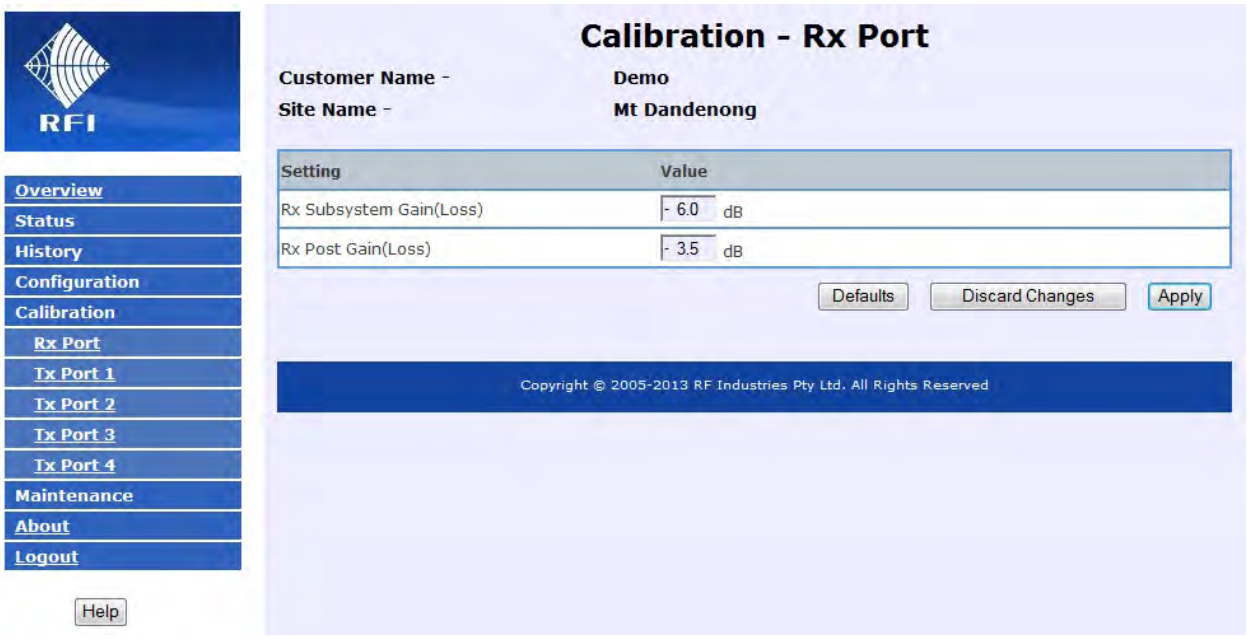
10.36 Calibration Menu

The "Calibration" menu allows the ASMs associated system components' (couplers, feeders) values to be programmed.

Selecting each indented topic under "Calibration" will display that item as a separate display page.



10.37 Calibration – Rx Port



Rx Subsystem Gain (Loss):

This field previously appeared under *Configuration – Antenna Isolation* in earlier firmware versions.

The combined value of the receive antenna coaxial cable feeder insertion loss, TTA or Receiver Multicoupler gain (or loss) and an separate preselector or post-filter.

The value of the nett gain (or loss) of the Receiver subsystem should be entered here. This value represents the sum of the insertion losses of the various elements of the receiver subsystem and the gain of its amplifier elements (if any).

Examples of this may be;

Receiver Feeder loss	- 3.0 dB
Receiver Preselector loss	- 1.0 dB
Receiver Multicoupler gain	+ 7.0 dB
Rx Subsystem Nett Gain	+ 3.0 dB

or;

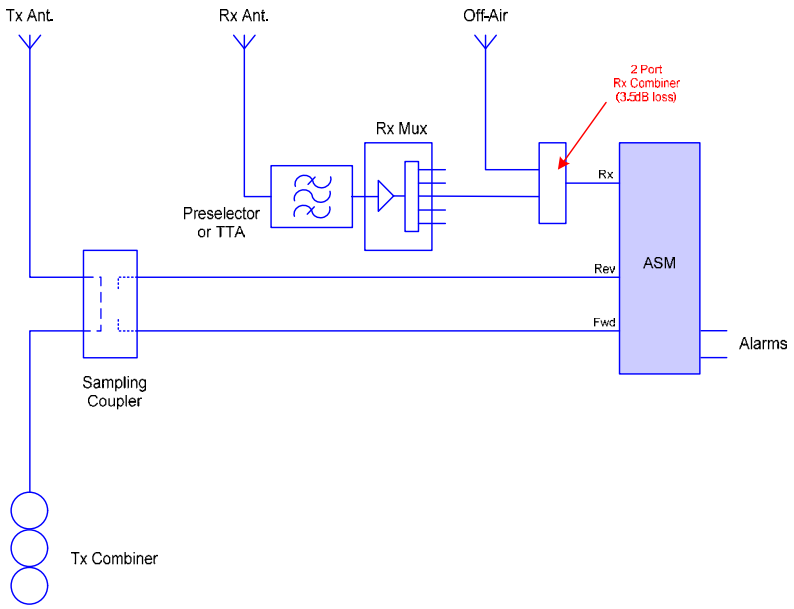
TTA Preselector loss	- 1.0 dB
TTA Amplifier gain	+20.0 dB
Receiver Feeder loss	- 3.0 dB
Receiver Multicoupler Divider loss	-10.0 dB
Rx Subsystem Nett Gain	+ 6.0 dB

The Rx Subsystem loss considers all of the Rx subsystem components that determine the Rx signal level as seen by the base station receivers on the site.

Rx Post Gain (Loss):

The value of any splitter/coupler loss that may be added into the system when multiple receiver paths are being combined for monitoring by an ASM.

Example: a two port receiver combiner may add 3.5dB of additional loss into the ASM receiver monitoring configuration (shown above as "-3.5").



Example Installation – Rx Post Gain (Loss) shown

The Rx Post Gain(Loss) value considers the additional loss/gain in the Rx subsystem that is seen by the ASM – compared to that seen by the base station receivers on the site.

Defaults:

Clicking this button enters the factory default values for the Rx Port page, which are:

Rx System Gain(Loss)	0dB
Rx Post Gain (Loss)	0dB

Discard Changes:

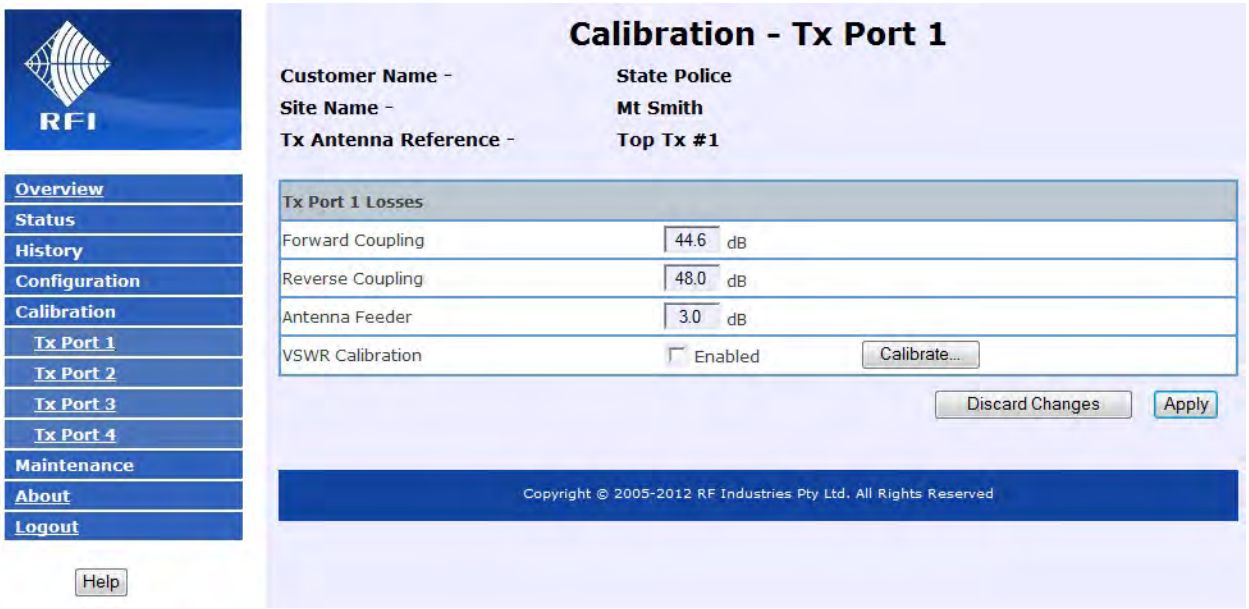
Click this button to restore the values to those present when the page was last re-displayed.

Note that if invalid values are being displayed after an Apply attempt, these values may not match the current repeater configuration. In this case, just select the Configure/Rx Port menu item again to re-display the current configuration.

Apply:

This will attempt to apply the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

10.38 Calibration – Tx Port 1



This page is used for calibrating the Coupler coupling loss settings and the Channel BTx Power levels.

Note: Only channels that have a frequency programmed, and which have been enabled will be displayed.

Tx Port Losses:

Forward Coupling:

The combined value of the Coupler forward coupling loss and the connecting cable insertion loss for this Tx Port. This value is used to calculate the reported power level for channels on this Port.

Reverse Coupling:

The combined value of the Coupler forward coupling loss and the connecting cable insertion loss for this Tx Port. This value is used to calculate the reflected power level for channels on this port and contributes to the reported VSWR figure.

Antenna Feeder:

The loss of the Antenna Feeder cable for this Port. This value is used to compensate the calculated Fwd and Rev Power levels so that the reported VSWR figure represents the VSWR value as seen at the Antenna. The value entered in this field should represent the insertion loss in one direction of the feeder only (i.e. from the Coupler "to" the antenna).

VSWR Calibration:

Note: The "VSWR Calibration" does not need to be carried out when using SP3855-4440-DFF1RU and SP7496-4440-DFF1RU Dual Directional Couplers. The *Enabled* checkbox should be left un-ticked when using these model couplers and the process outlined in the *Tx Port VSWR CALIBRATION* section of this manual should be ignored.

An enhanced VSWR calculation algorithm may be used to improve the accuracy of the reported Antenna VSWR figures when significant Antenna feeder losses are present. The enhanced algorithm is only applicable to "legacy" model couplers and used in VSWR calculations if the Enabled checkbox is ticked.

For reference, the following photos show the physical difference between the two types of couplers:

"Legacy" model Bi-Directional Coupler (VHF model shown)

"Current" model Dual-Directional Coupler (700/800/900MHz model shown)

The "legacy" model couplers are readily identifiable as they have the "FWD" and "REV" sampling ports (Type N connectors) on a separate housing face to the 7/16 DIN connectors.

The "current" model dual-directional couplers have those ports on the ends of the coupler alongside and on the same housing faces as the 7/16 DIN connectors.

Refresh:

Click this button to update the Reported Pwr status information with the most recent measurements.

Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.

Note that if invalid values are being displayed after an Apply attempt, these values may not match the current saved settings. In this case, just click on the relevant "Calibration/Tx Port" menu item to re-display the current settings.

Apply:

This will attempt save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background. If successfully saved, the Reported Pwr values are adjusted to current values.

Note: Whenever programming changes are applied, the alarm status for affected channels is re-initialized.

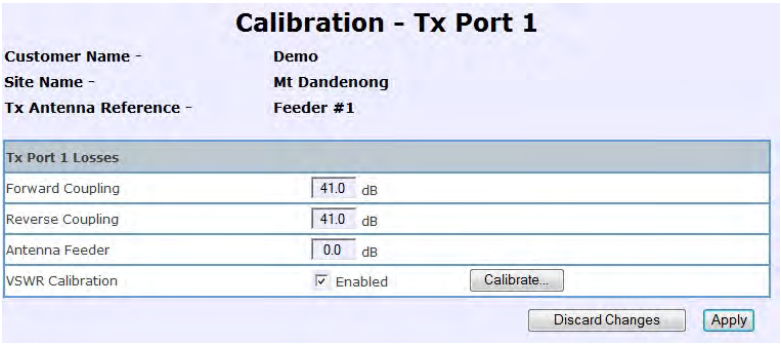
RECOMMENDED CALIBRATION PROCEDURE

Calibration of the ASM allows system parameters such as coupling values, interconnecting cable losses and system feeder losses to be programmed into the ASM for optimum measurement accuracy.

Selecting each indented topic under the "Calibration" screen in the GUI will display that item as a separate page.

The following calibration procedure is for "Tx Port 1" and its associated coupler. The procedure for Tx Ports 2, 3 and 4 and their associated couplers is identical.

The screen at left contains all the necessary fields for the calibration process.



Tx Port Calibration screen

To complete the calibration process the required Test Equipment includes;

- Service Monitor capable of providing a 0dBm signal output using the same modulation type used by the system, and as selected in the *Configuration – Channels* GUI screens.
- An accurate 50ohm load capable of handling the base station transmitter power.
- A 50ohm cable, of known insertion loss, to connect between the Service Monitor and the ASM coupler.

Note: For the purpose of this calibration procedure description, the insertion loss of this 50ohm cable is assumed at "0.6dB". Adjust this value to accurately represent the cable actually being used.

Note: For the purpose of this calibration procedure description, the insertion loss of the Antenna Feeder cable is assumed at "0.0dB". Adjust this value to accurately represent the actual loss of the antenna feeder installed on site.

FORWARD COUPLING

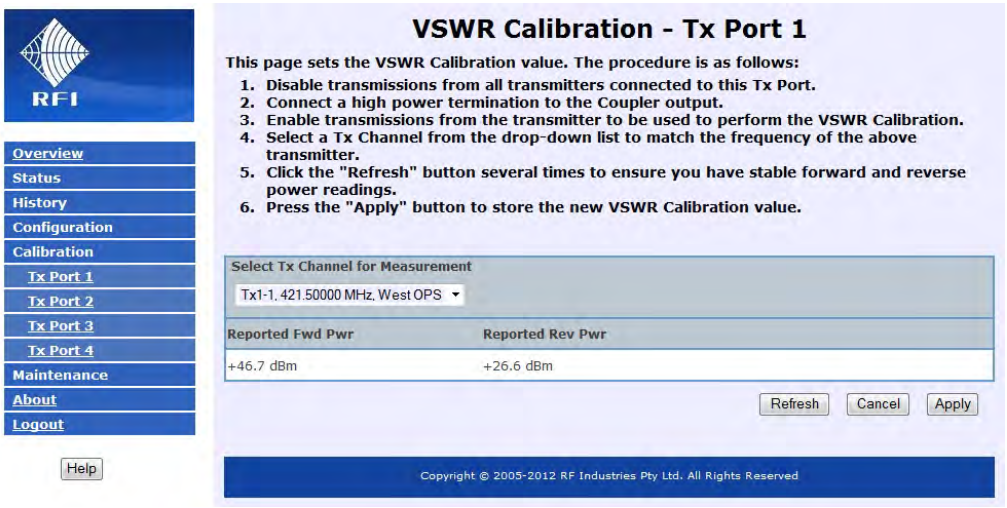
1. Connect the Service Monitor to the "*From Combiner*" port of the ASM coupler using the 50ohm cable, and the 50Ω termination to the "*To Antenna*" port of the coupler.
2. Set the Service Monitor signal generator to the correct frequency and modulation type for the channel being measured and adjust its output level for 0dBm.
3. Enter 40.0 dB into both the *Forward Coupling* and *Reverse Coupling* fields on the GUI.
4. Enter 0 dB into the *Antenna Feeder* field.
5. Click the "*Apply*" button toward the upper right of the screen.
6. Go to the *Status – Tx Port 1* GUI screen and confirm that the displayed value for the channel is correct (i.e. 0dBm).
7. If it is not displaying correctly, return to the *Calibration – Tx Port 1* GUI screen and adjust the *Forward Coupling* value to correct the reading.
8. Click the "*Apply*" button toward the upper right of the screen.
9. Repeat steps 6 to 8 until the *Status – Tx Port 1* displayed value is correct for the test frequency.

REVERSE COUPLING

1. Do not change the Service Monitor signal generator settings and test cable used.
2. Move the Service Monitor signal generator cable to the "*To Antenna*" port of the coupler and the 50Ω termination to the "*From Combiner*" port of the coupler.
3. Go to the *Status – Tx Port 1* GUI screen and confirm that the displayed value for the channel is correct (i.e. 0dBm).
4. If it is not displaying correctly, return to the *Calibration – Tx Port 1* GUI screen and adjust the *Reverse Coupling* value to correct the reading.
5. Click the "*Apply*" button toward the upper right of the screen.
6. Repeat steps 3 to 5 until the *Status – Tx Port 1* displayed value is correct for the test frequency.

NOTE: Restore the connection of the cabling to/from the coupler for normal operation.

TX PORT VSWR CALIBRATION


RFI
Overview
Status
History
Configuration
Calibration
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
Maintenance
About
Logout
Help
VSWR Calibration - Tx Port 1
This page sets the VSWR Calibration value. The procedure is as follows:
1. Disable transmissions from all transmitters connected to this Tx Port.
2. Connect a high power termination to the Coupler output.
3. Enable transmissions from the transmitter to be used to perform the VSWR Calibration.
4. Select a Tx Channel from the drop-down list to match the frequency of the above transmitter.
5. Click the "Refresh" button several times to ensure you have stable forward and reverse power readings.
6. Press the "Apply" button to store the new VSWR Calibration value.
Select Tx Channel for Measurement
Tx1-1, 421.50000 MHz, West OPS
Reported Fwd Pwr
Reported Rev Pwr
+46.7 dBm
+26.6 dBm
Refresh
Cancel
Apply
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This page is used to set up the VSWR Calibration algorithm for VHF, UHF and 700/800/900MHz systems utilising "legacy" model bi-directional couplers.

The ASM is equipped with an algorithm to improve the "at the antenna" VSWR measurement for installations utilising these "legacy" model couplers.

This algorithm compensates for some of the feeder system frequency and phase variables present during VSWR measurement and is not required, and should not be used, for site installations using "current" model dual-directional couplers.

For site installations using "current" model couplers, the VSWR Calibration *Enabled* box should remain unchecked, and this *Tx Port VSWR Calibration* process need not be performed.

Cancel:

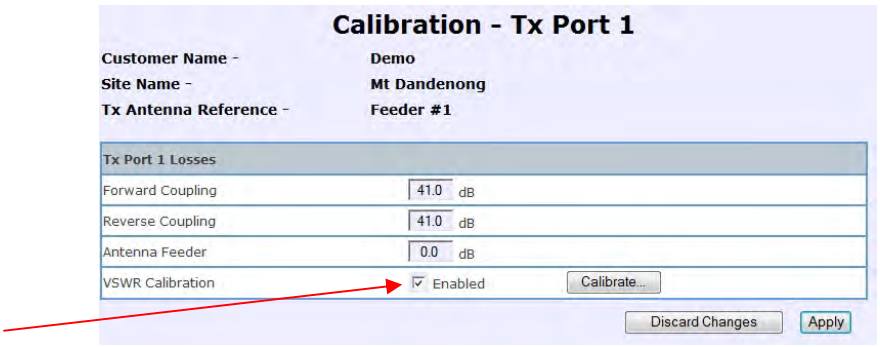
Exits the VSWR Calibration page without saving any changes and returns to the Tx Port Calibration page.

Apply:

This applies the VSWR Calibration algorithm. Use the Enable setting on the Tx Port Calibration page to control usage of the algorithm in VSWR calculations.

TX PORT VSWR CALIBRATION

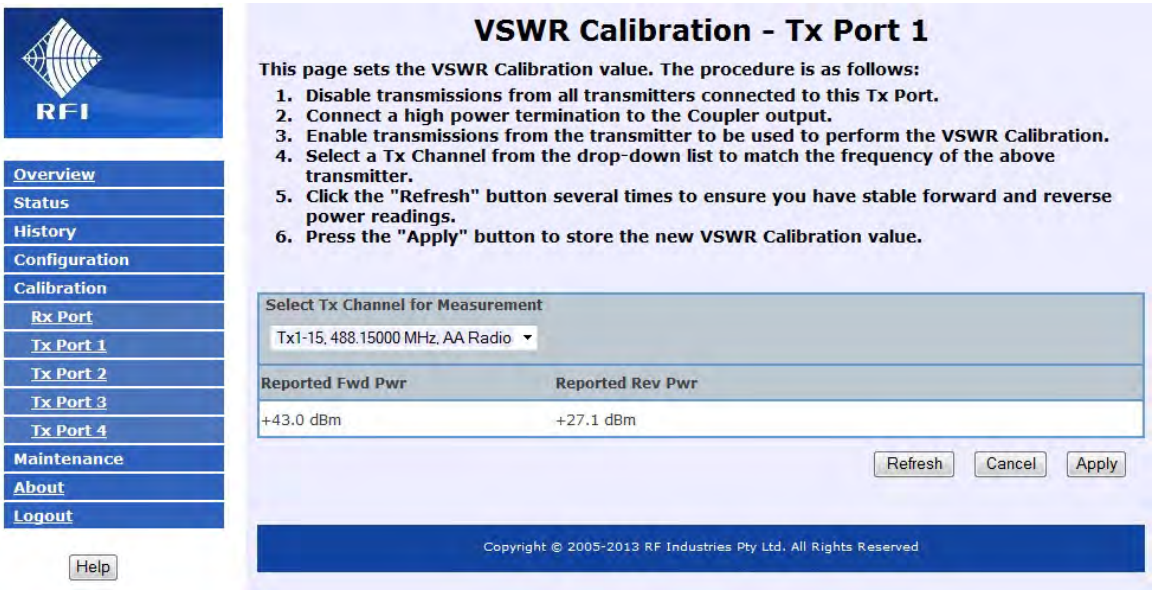
To perform the VSWR Calibration, complete the *Calibration – Tx Port* process first, then select a channel in the middle of the frequency range and then check the "Enabled" box on the *Calibration – Tx Port* screen.



Tx Port Calibration screen

Then select the "Calibrate" button and the screen in the following section of this manual will appear after a prompt.

10.39 VSWR Calibration


RFI
Overview
Status
History
Configuration
Calibration
Rx Port
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
Maintenance
About
Logout
Help
VSWR Calibration - Tx Port 1
This page sets the VSWR Calibration value. The procedure is as follows:
1. Disable transmissions from all transmitters connected to this Tx Port.
2. Connect a high power termination to the Coupler output.
3. Enable transmissions from the transmitter to be used to perform the VSWR Calibration.
4. Select a Tx Channel from the drop-down list to match the frequency of the above transmitter.
5. Click the "Refresh" button several times to ensure you have stable forward and reverse power readings.
6. Press the "Apply" button to store the new VSWR Calibration value.
Select Tx Channel for Measurement
Tx1-15, 488.15000 MHz, AA Radio
Reported Fwd Pwr
Reported Rev Pwr
+43.0 dBm
+27.1 dBm
Refresh
Cancel
Apply
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This page is used to set up the VSWR Calibration algorithm for VHF, UHF and 700/800/900MHz systems utilising "legacy" model bi-directional couplers.

The ASM is equipped with an algorithm to improve the "at the antenna" VSWR measurement for installations utilising these "legacy" model couplers. This algorithm compensates for some of the feeder system frequency and phase variables present during VSWR measurement and is not required, and should not be used, for site installations using "current" model dual-directional couplers. For site installations using "current" model couplers, the VSWR Calibration *Enabled* box should remain unchecked, and the *Tx Port VSWR Calibration* process need not be performed.

Note: To perform the VSWR Calibration, first complete the *RECOMMENDED CALIBRATION PROCEDURE* in the previous section of this manual.

Reported Fwd Pwr & Reported Rev Pwr:

The result of the last signal power level measurements in dBm.

Refresh:

To update to the latest measurements, click the Refresh button.

Cancel:

Exits the VSWR Calibration page without saving any changes and returns to the Tx Port Calibration page.

Apply:

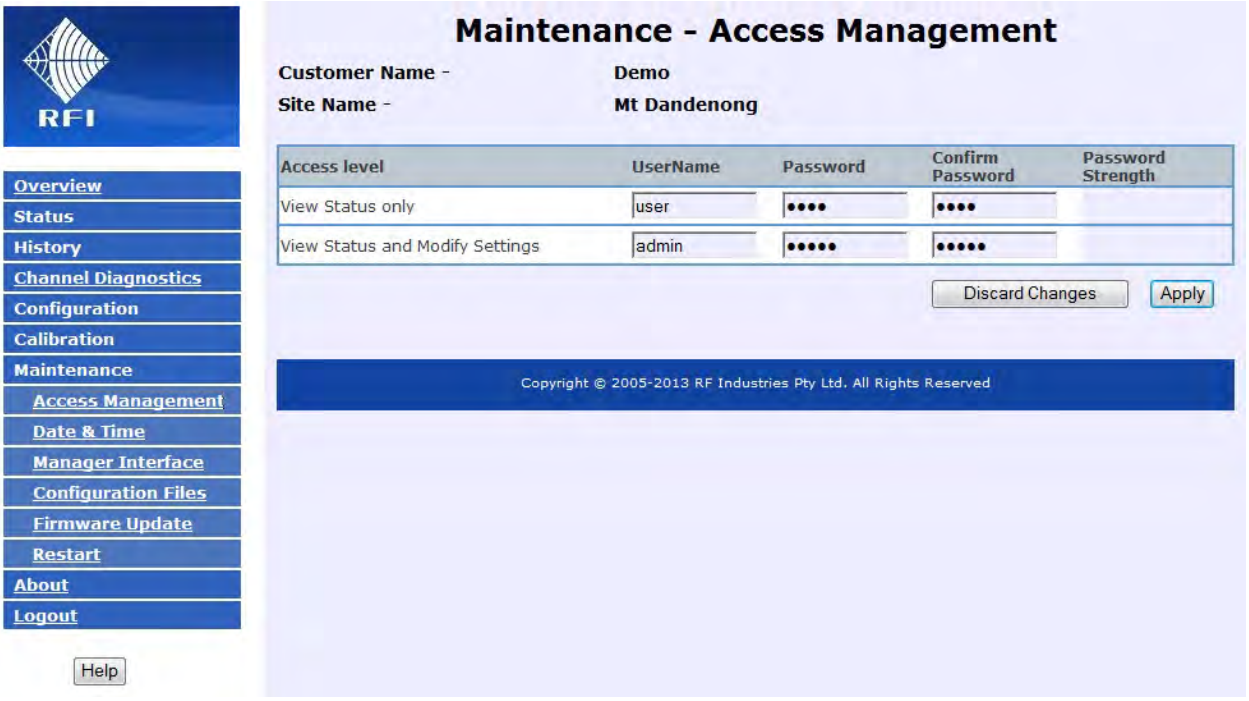
This applies the VSWR Calibration algorithm. Use the Enable setting on the Tx Port Calibration page to control usage of the algorithm in VSWR calculations.

10.40 Maintenance Menu

The "Maintenance" menu allows all of the ASMs interface and system-wide formatting parameters to be viewed.

Selecting each indented topic under "Maintenance" will display that item as a separate display page.

10.41 Maintenance – Access Management



This page is used for managing access to the ASM. There are two levels of access available to users of the system:

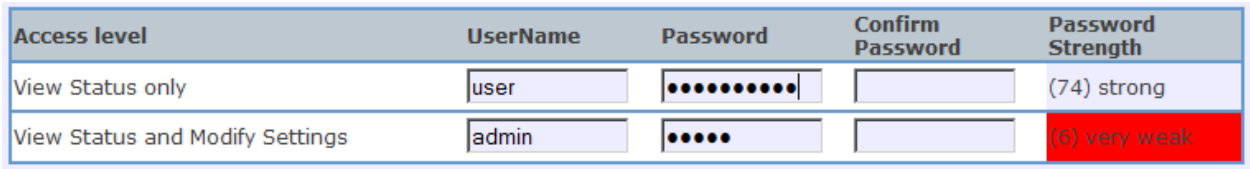
View Status only:

These are the User Name and Password to be used by users that may only view Status pages. Users logged in with these credentials will not be able to view or change any Configuration settings.

View Status and Modify Settings:

The User Name and Password to be used by users that are to have access to the Configuration, Calibration and Maintenance settings as well as the Status pages.

Note: User Names and Passwords may contain up to 16 characters each. Passwords are case sensitive, but User Names are not. Passwords are strength tested, as they are entered, to assist appropriate security integrity is maintained. Passwords must meet a Password Strength value of at least 50 to be accepted.



Tips for strong passwords:

Make your password 8 characters or more in length.
Use mixed case letters (upper and lower case).
Make more than one digit a number.
Use special characters (!,@,#,$,%,^,&,*,?,_,~).

Discard Changes:

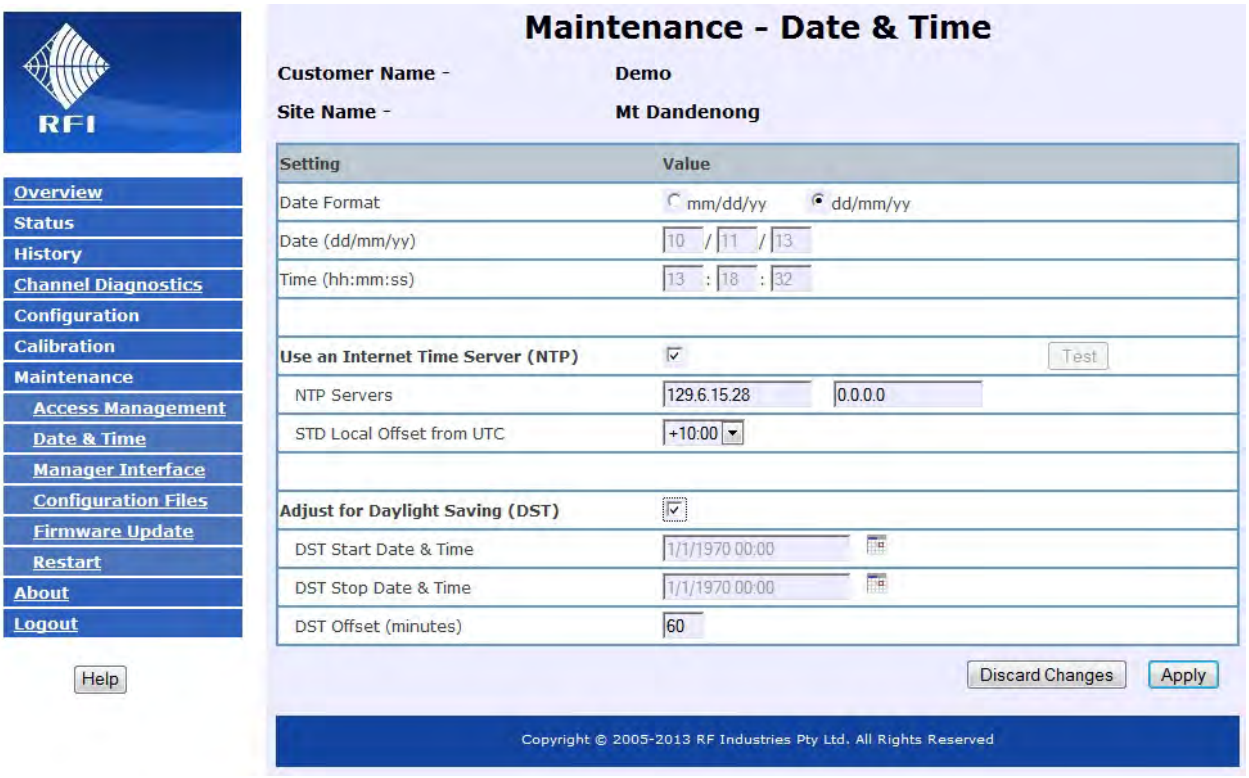
Click this button to restore the values to those present when the page was last redisplayed.

Note: If invalid values are being displayed after an Apply attempt, these values may not match the current unit configuration. In this case, just click on the Maintenance/User Management menu item to re-display the current configuration.

Apply:

This will save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

10.42 Maintenance – Date & Time



The internally maintained real time clock Date and Time values may be adjusted using these fields.

Date Format:

Two styles of date format can be selected to cater for international format preferences.

Date:

Enter the current date in the displayed mm/dd/yy or dd/mm/yy format.

Time:

Enter the current time in the displayed hh:mm:ss format.

Use an Internet Time Server (NTP)

If selected this feature allows a primary and secondary NTP server address to be nominated for automatic updating of the ASM date and time. NTP time is displayed as UTC time.

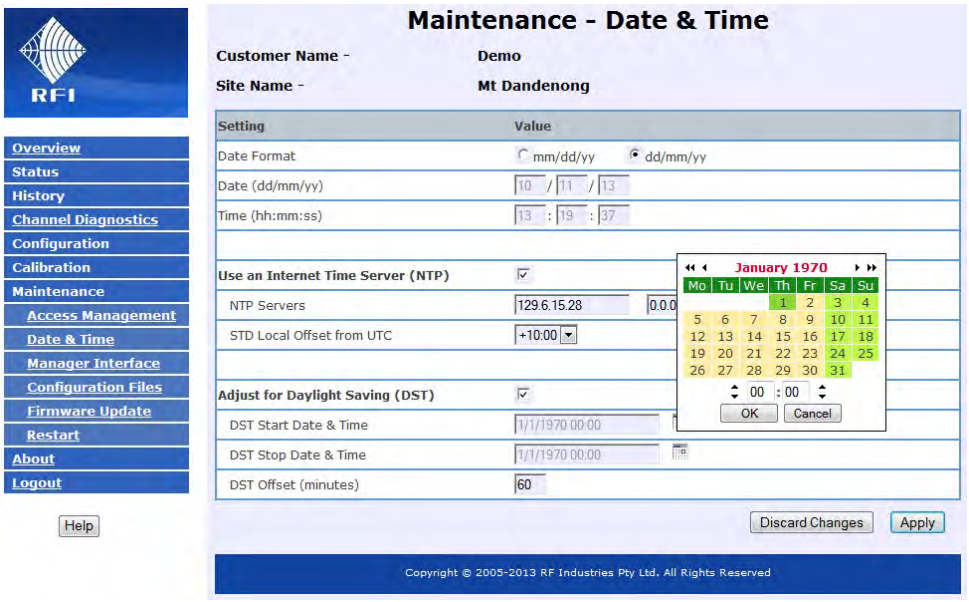
Pressing the Test button confirms connectivity to the nominated primary server. To confirm connectivity to the secondary server, place its address in the primary address field.

A STD Local Offset should be selected to offset local time from the UTC time obtained from the nominated NTP server(s).

Adjust for Daylight Saving (DST)

If selected this feature allows a nominated Daylight Saving Time correction to be applied to the NTP server(s) time.

Select the relevent date and times for the start and finish of daylight saving time at the ASM location, and the associated DST offset (in minutes) to be applied during the nomited DST period.



Note: A convenient calendar is available next to the DST Start and Stop fields to allow dates to be selected directly.

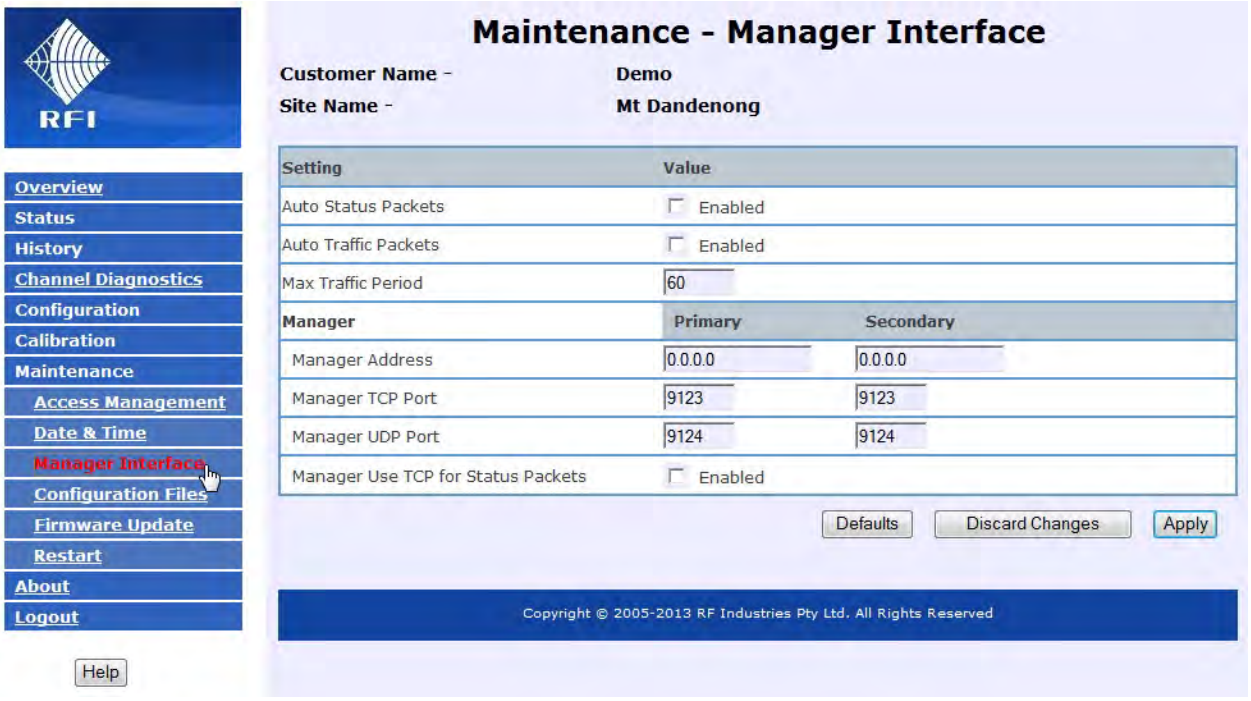
Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.

Apply:

This will save and activate the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

10.43 Maintenance – Manager Interface



The configuration and status of multiple Antenna System Monitor units may be remotely managed by a PC based Manager application. Normally the Manager application will control the settings on this page, but, using this page it is possible to manually configure (or override) these settings.

Auto Status Packets:

This controls the automatic sending of Status Change packets to the Manager application. If enabled, any change in alarm status results in a Status Change packet. This setting will be ignored if the Manager Address is set to "0.0.0.0".

Auto Traffic Packets:

This controls the automatic sending of Tx Traffic data packets to the Manager application. If enabled, any change in detected Tx carrier presence results in a Traffic packet. In addition, if any Tx carrier remains ON or OFF for "Max Traffic Period" seconds, a STILL-ON or STILL-OFF Traffic packet is sent. This setting will be ignored if the Manager Address is set to "0.0.0.0".

Max Traffic Period:

This controls the automatic sending of the STILL-ON and STILL-OFF traffic data packets as detailed above.

Manager Address:

The IP address for the Manager application. If a Manager application is not being used this should be 0.0.0.0. Both a primary and a secondary address is provided if Manager Messages are desired to be sent to two applications/destinations.

Manager TCP Port:

The port number for TCP communications to the Manager application. Both a primary and a secondary address is provided if Manager Messages are desired to be sent to two applications/destinations.

Manager UDP Port:

The port number for UDP communications to the Manager application. Both a primary and a secondary address is provided if Manager Messages are desired to be sent to two applications/destinations.

Manager Use TCP for Status Packets:

The default communications protocol for Status change and Traffic data packets is UDP. If TCP is required for Status packets, this setting should be enabled.

Note: This option should only be activated if essential for networking reasons. The UDP protocol is strongly preferred, as the protocol and processing overheads are significantly lower and packets can be sent at a higher rate. Note also that Traffic data packets will always use UDP protocol.

Defaults:

Clicking this button enters the factory default values for the Communications settings, which are:

Auto Status Packets	Disabled
Auto Traffic Packets	Disabled
Max Traffic Period	60
Manager Address	0.0.0.0
Manager TCP Port	9123
Manager UDP Port	9124
Manager Use TCP for Status Packets	Disabled

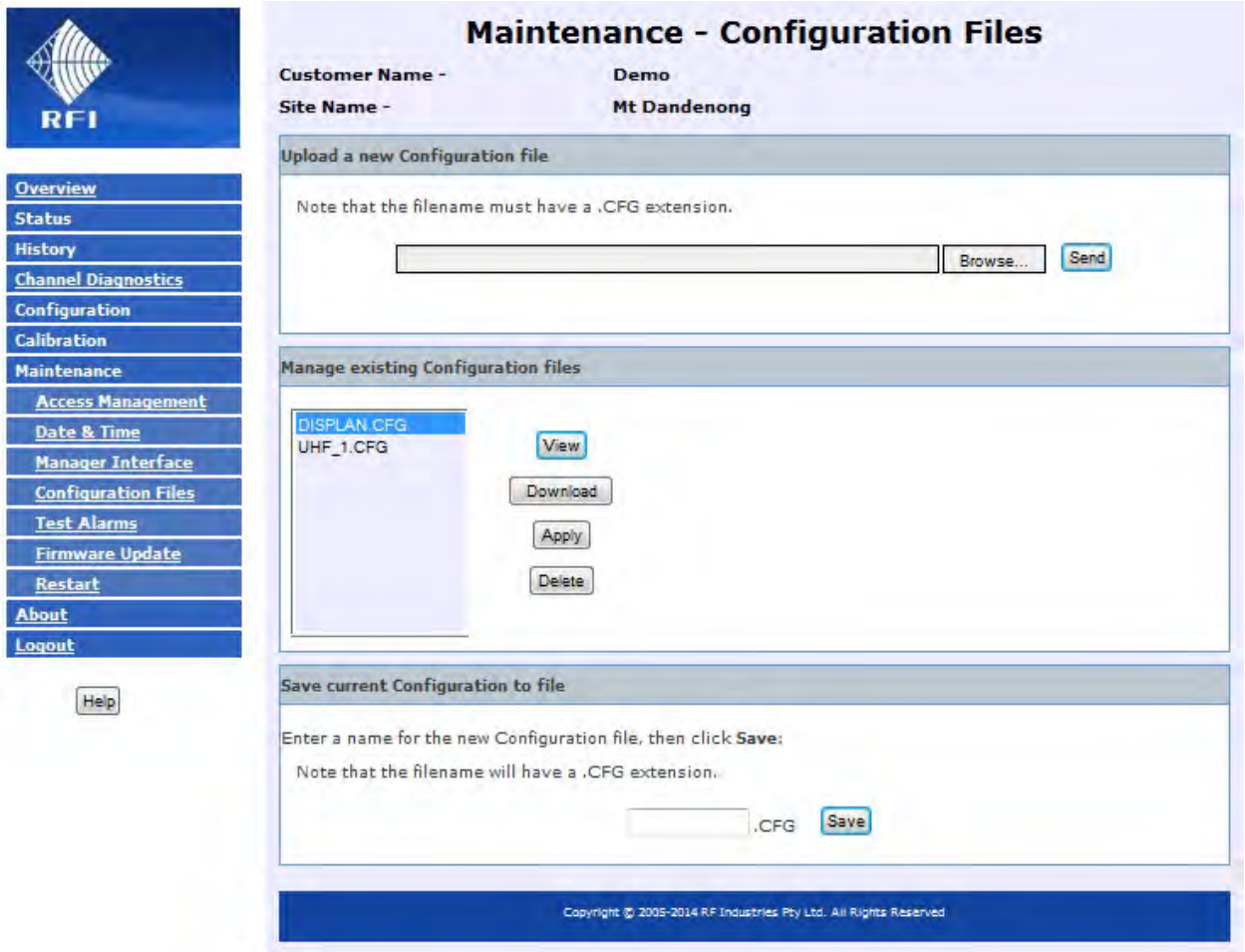
Discard Changes:

Click this button to restore the values to those present when the page was last re-displayed.
Note that if invalid values are being displayed after a Save attempt, these values may not match the current unit configuration. In this case, just select the Maintenance/Manager Interface menu item again to re-display the current configuration.

Save:

This will save the values entered. If any out of range values are present, nothing will be saved and the problem settings will be highlighted with a red background.

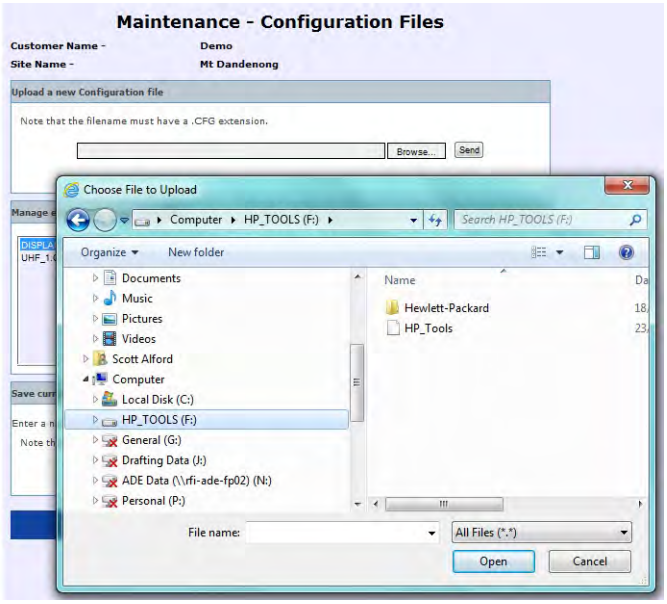
10.44 Maintenance – Configuration Files



Configurations for the ASM may be stored in a list within the ASM and loaded or saved to a nominated computer drive if desired.

Note: Due to memory architecture limitations, this feature is not available in "K1" models of the ASM.

Upload a new Configuration file:



Click "Browse" to locate the desired ASM Configuration file from a chosen drive/directory location. Once the desired drive/directory/name has been selected from the popup box, click "Send" to upload the nominated Configuration file to the list of existing Configuration files.

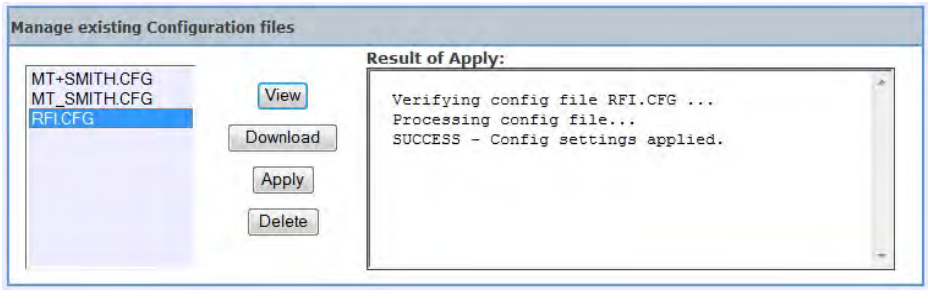
Note: This Configuration file must be highlighted in the Configuration list and the "Apply" button clicked to activate this uploaded Configuration in the ASM.

Manage existing Configuration files:

VIEW: To view the text contents of highlighted Configuration in the web browser.

DOWNLOAD: To save the highlighted Configuration file to a nominated computer drive/directory.

APPLY: Activates the highlighted Configuration in the ASM.



A progress and completion message will appear in a "Results of Apply" text box (refer above example).

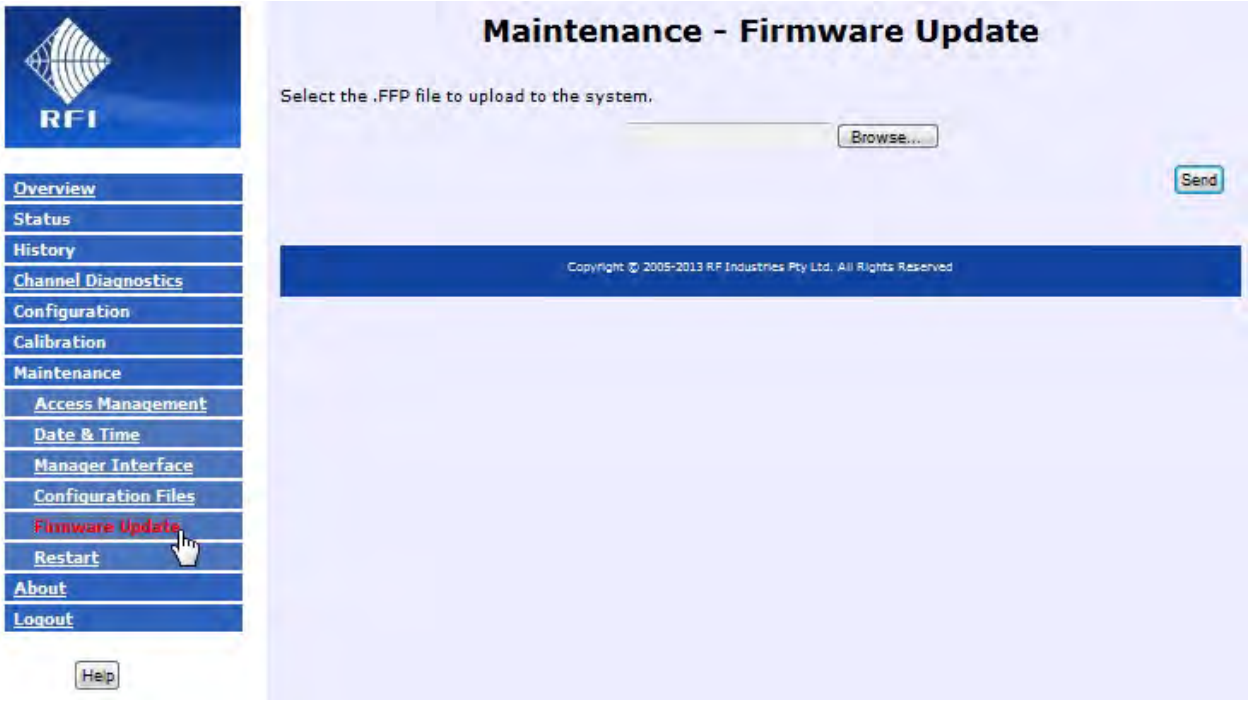
DELETE: To delete the highlighted Configuration file from the list.

Save current Configuration to file:

Enter a file name and click "Save" to save the current ASM configuration to the list of stored ASM configurations.

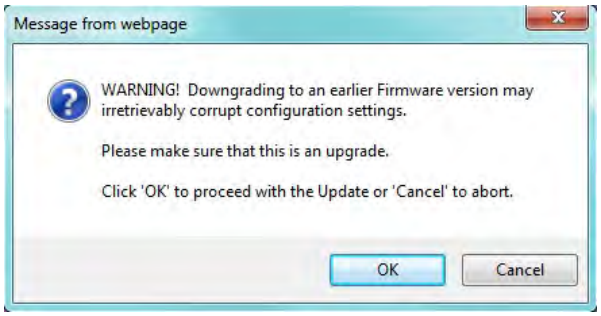
Note: The stored ASM configurations list is capable of holding many different Configurations. For practical management, it is recommended to limit the number of Configurations kept in this list to less than 10.

10.45 Maintenance – Firmware Update



Firmware upgrades are normally supplied using a "FFP" file extension (Firmware & File system Package).

Enter or Browse the file path of the system firmware update file, then click the Send button. A message box will appear to remind the user to ensure they are uploading a later revision of firmware into the unit.


Message from webpage
WARNING! Downgrading to an earlier Firmware version may irretrievably corrupt configuration settings.
Please make sure that this is an upgrade.
Click 'OK' to proceed with the Update or 'Cancel' to abort.
OK
Cancel

Click *OK* to start the update file download process. Depending on the speed of the connection, it can take several minutes for the file upload to complete and be confirmed.

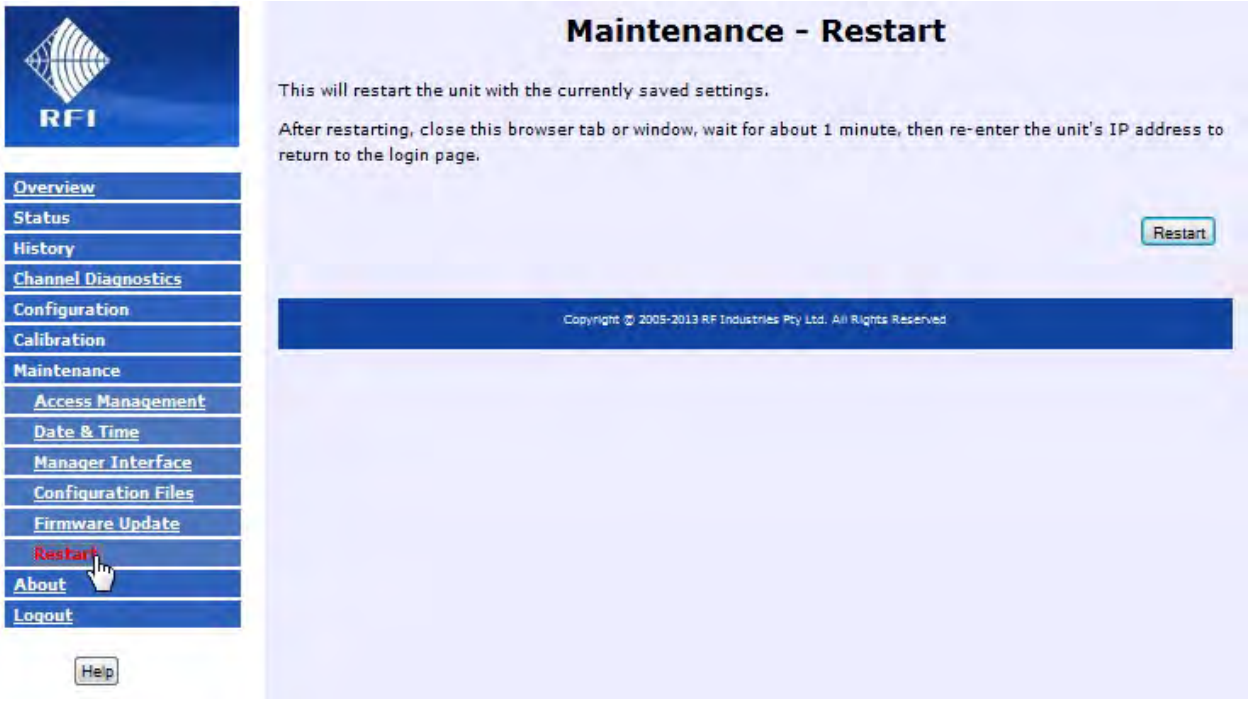
After waiting for about a minute, re-display the System Status page to confirm that the update completed successfully. If the update process is interrupted or unsuccessful for any reason, the unit will restart with the previous firmware.

Note: You may need to clear your browser's cache to view changed pages. If you happen to get a connection timeout message, do not click the retry button**.** Instead, wait for a minute or so and then re-display the System Status page to confirm that the update actually completed satisfactorily.

Note: Firmware upgrades can impact existing ASM configurations. Please read Service Bulletins prior to initiating a firmware upgrade so that impacts are understood prior to any upgrade activity.

WARNING: Do not attempt to revert to an older version of firmware as this could corrupt the ASM and render it inoperable and the unit's return to the factory may be necessary.

10.46 Maintenance - Restart



Clicking on this selection will initiate an ASM system "restart".

Note: The unit will normally only need to be restarted to activate new Communications settings. If restarted, an ASM may take up to several minutes to reboot and re-initialise itself before it becomes available for a "Log in" and a new session.

10.47 About – Antenna System Monitor

Antenna System Monitor

The Antenna System Monitor (ASM) monitors channel specific forward and reflected transmitted power for up to 80 channels through four separate transmitter combining systems. Using the high coupling port directivity of an external four port coupler, a wide dynamic range of forward to reflected power (VSWR) can be measured. All frequencies and level thresholds are software definable.

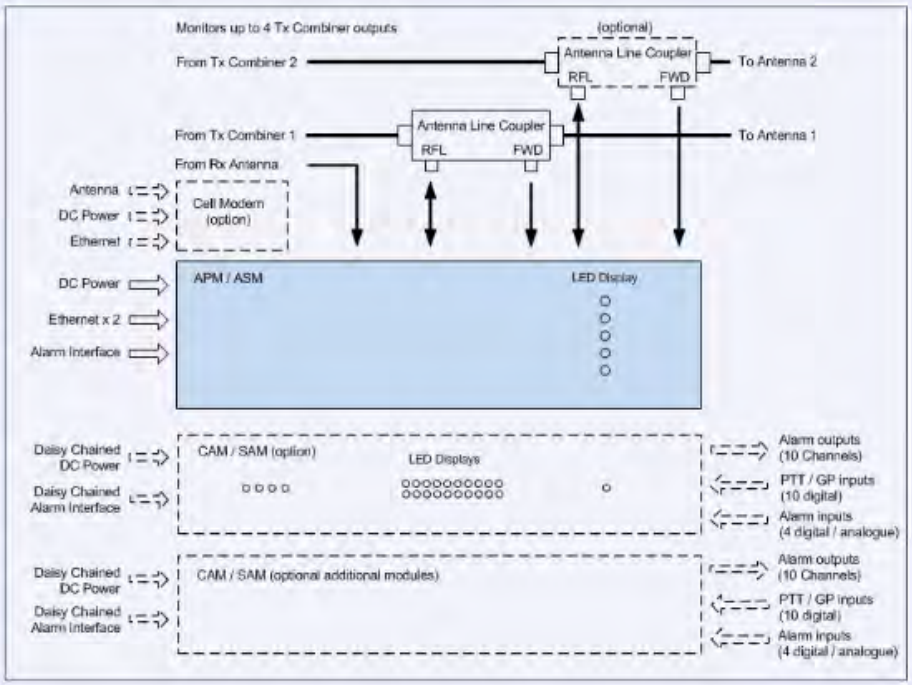
Status, Configuration, Calibration, Alarms, Communication Setup and Maintenance interfaces are managed via the Web GUI interface which is accessed through one of the Ethernet ports. A command line based interface is also available via a TCP/IP Telnet session.

Alarms are communicated using N/O or N/C contact relays interfaced via the DB15 male connector at the rear of the unit. LEDs on the front panel of the unit display DC power presence, an aggregated Summary fault, Rx level, Forward Tx power and VSWR threshold failures.

Optional Channel Alarm Module (CAM) and Site Alarm Monitor (SAM) modules are available for ASM users. These modules provide individually user-assigned dry relay alarm output contacts for up to ten (10) of the channels being monitored by the ASM. The associated base station PTT lines for these channels can also be monitored via digital logic inputs to correlate the base station's current Tx status. Any of these ten (10) inputs may also be configured as general purpose digital alarm inputs for monitoring of other equipment at the site. Four (4) additional digital alarm inputs are also provided for use on the CAM, and the SAM allows these four (4) inputs to be configured for a combination of temperature, digital logic and analogue voltage level monitoring. A combination of up to ten (10) CAM and SAM modules may be intermixed and cascaded onto a single ASM.

The Antenna System Monitor is designed and built in Australia by RFI. Please refer to the User Manual for detailed installation and operational Instructions.

The block diagram below provides an overview of the system interfaces.



For further information or help with this product contact your nearest RFI sales Office or through the following:

Region	USA	EMEA	ASIA PACIFIC
Sales email	webmaster@rfi.com.au	sales@rfi.com.au	webmaster@rfi.com.au
Tech Support	support@rfi.com.au	support@rfi.com.au	support@rfi.com.au
Telephone International	+1 (330) 486 0706	+44 1869 255 772	+61 7 3621 9400
Telephone Local	330 486 0706	01869 255 772	1300 000 RF
Fax International	+1 (330) 486 0705	-	+61 2 9630 0844
Web	rfiamericas.com	rfiemea.com	rfi.com.au

This site is best viewed with Internet Explorer 8, Firefox Version 3.6, Chrome Version 9 or Safari Version 5.

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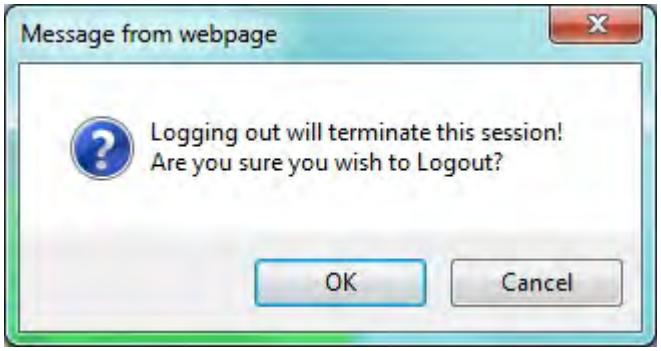
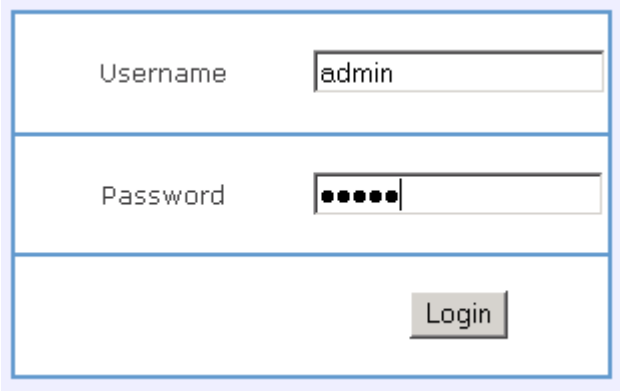
10.48 Logout

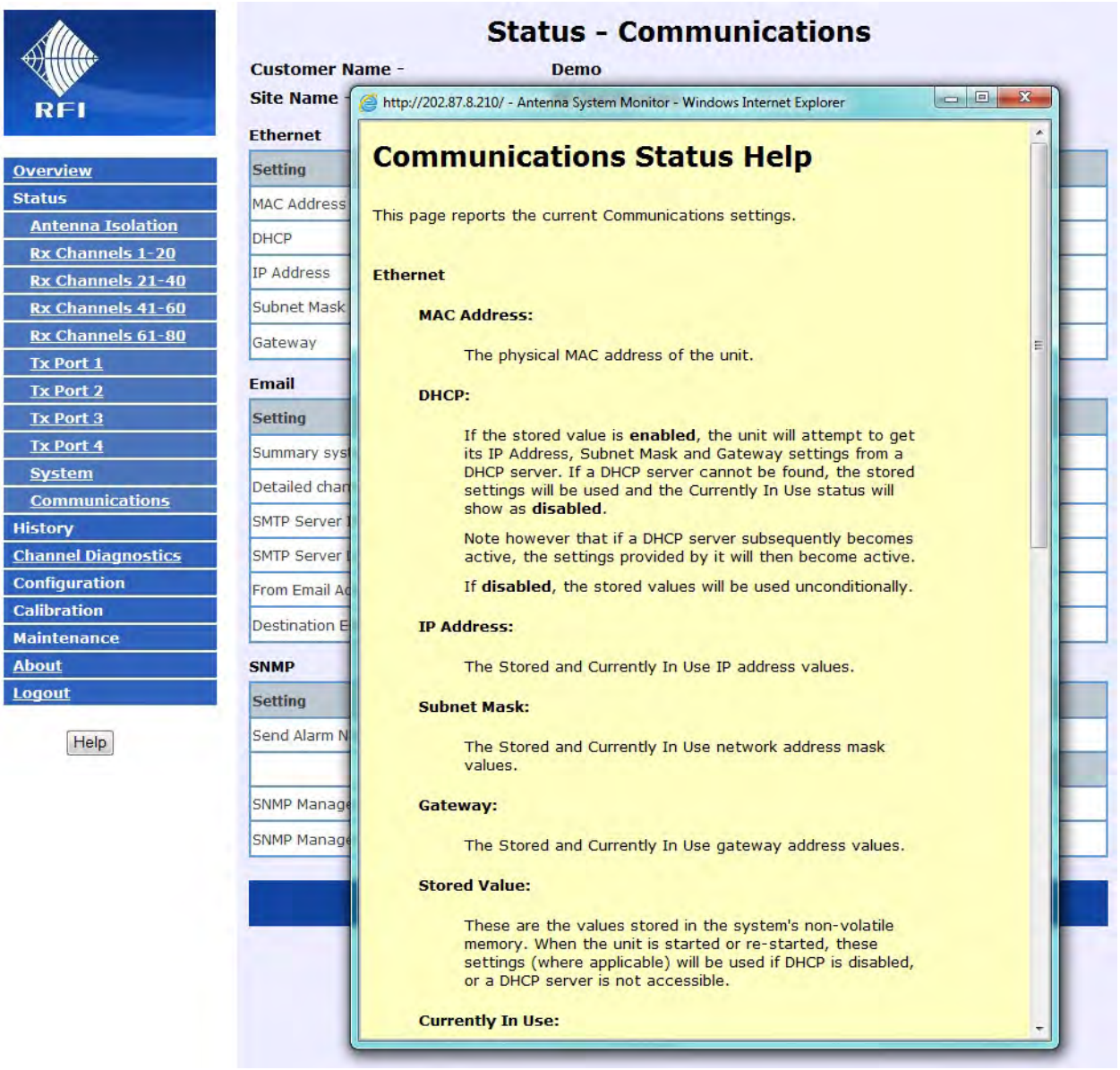
Clicking on this selection will present the "Log out" message box.



If "OK" is selected, the user will be logged out of the current webserver session and the original "Log in" screen will be presented, ready for a new session…..



10.49 HELP Screens


RFI
Overview
Status
Antenna Isolation
Rx Channels 1-20
Rx Channels 21-40
Rx Channels 41-60
Rx Channels 61-80
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
System
Communications
History
Channel Diagnostics
Configuration
Calibration
Maintenance
About
Logout
Help
Status - Communications
Customer Name -
Demo
Site Name -
Ethernet
Setting
MAC Address
DHCP
IP Address
Subnet Mask
Gateway
Email
Setting
Summary syst
Detailed chan
SMTP Server I
SMTP Server I
From Email Ad
Destination E
SNMP
Setting
Send Alarm N
SNMP Manage
SNMP Manage
http://202.87.8.210/ - Antenna System Monitor - Windows Internet Explorer
Communications Status Help
This page reports the current Communications settings.
Ethernet
MAC Address:
The physical MAC address of the unit.
DHCP:
If the stored value is enabled, the unit will attempt to get its IP Address, Subnet Mask and Gateway settings from a DHCP server. If a DHCP server cannot be found, the stored settings will be used and the Currently In Use status will show as disabled.
Note however that if a DHCP server subsequently becomes active, the settings provided by it will then become active.
If disabled, the stored values will be used unconditionally.
IP Address:
The Stored and Currently In Use IP address values.
Subnet Mask:
The Stored and Currently In Use network address mask values.
Gateway:
The Stored and Currently In Use gateway address values.
Stored Value:
These are the values stored in the system's non-volatile memory. When the unit is started or re-started, these settings (where applicable) will be used if DHCP is disabled, or a DHCP server is not accessible.
Currently In Use:

A comprehensive set of Help screens is available throughout the ASM GUI. On any page, click the *Help* button to display the available information for that page.

11. Switches, Connectors and Indicators

ASM Front and Rear Panel Layouts:

Antenna System Monitor (ASM) Front Panel Layout

Antenna System Monitor (ASM) Rear Panel Layout

CAM Front and Rear Panel Layouts:

Channel Alarm Module (CAM) Front Panel Layout

Channel Alarm Module (CAM) Rear Panel Layout

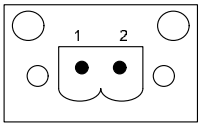
SAM Front and Rear Panel Layouts:

Site Alarm Module (SAM) Front Panel Layout

Site Alarm Module (SAM) Rear Panel Layout

ASM/CAM/SAM) DC Power connector (Pheonix 2-pin) pin-out:

The pin numbers on the polarized Pheonix 2-pin connector on the rear of the ASM (and optional CAM) are illustrated below.



Pinout of DC Connector

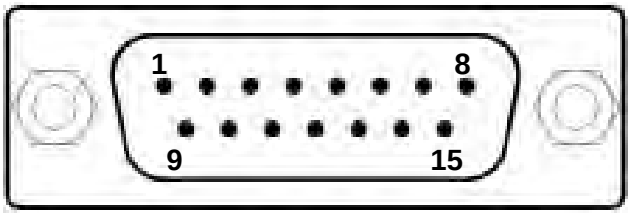
Pin Function Table:

Pin	Function
1	DC Power Input +ve
2	DC Power Input -ve

ASM Alarm/Comms connector (Sub D DB-15) pin-out:

The pin numbers on the DB15 (M) at the rear of the ASM are illustrated below.

An electrical schematic of the alarm pin-outs to the D-Sub DB15 (M) connector located at the rear of the ASM is illustrated on the next page.

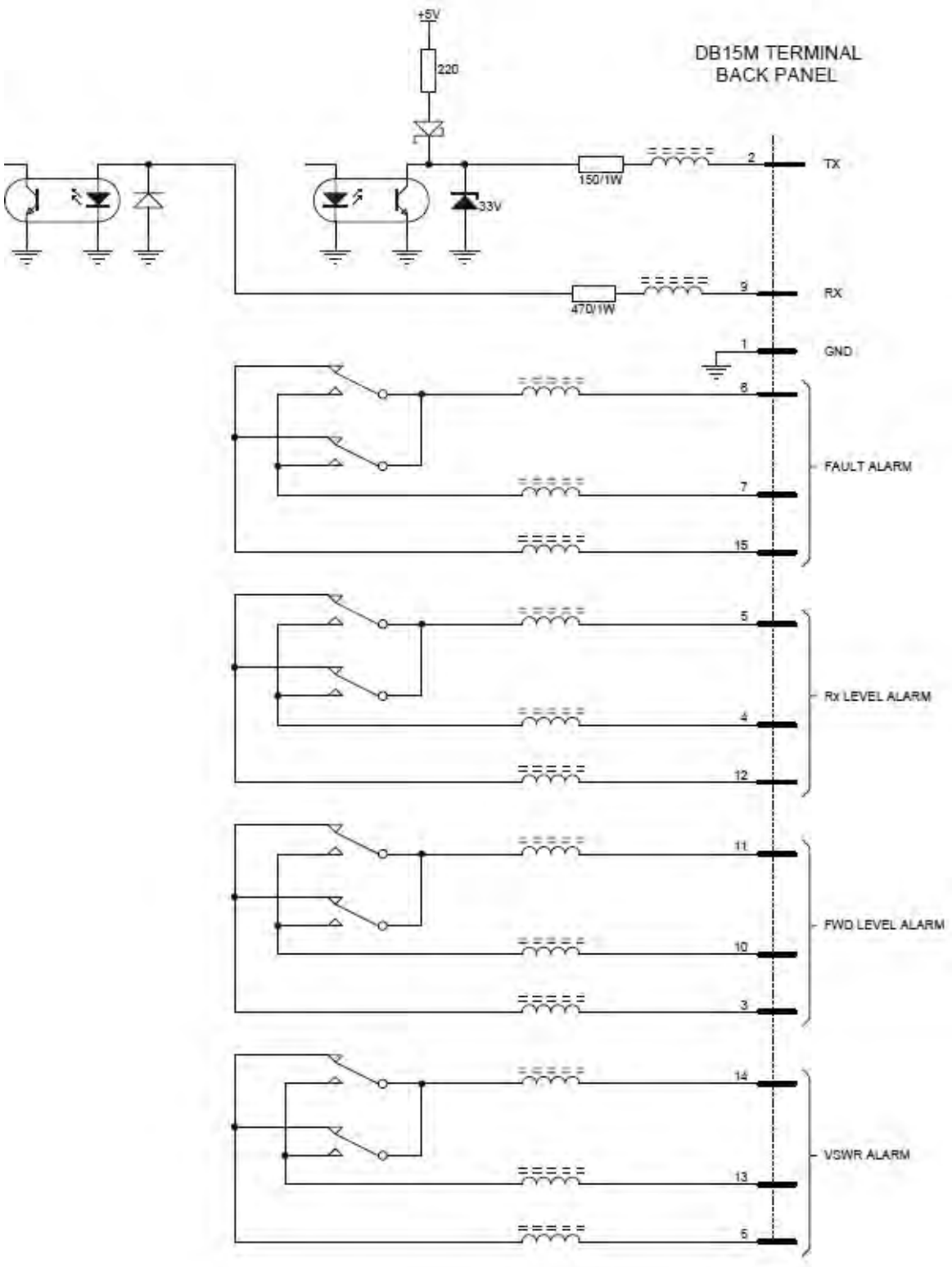


Pinout of DB15 Connector

Pin Function Table:

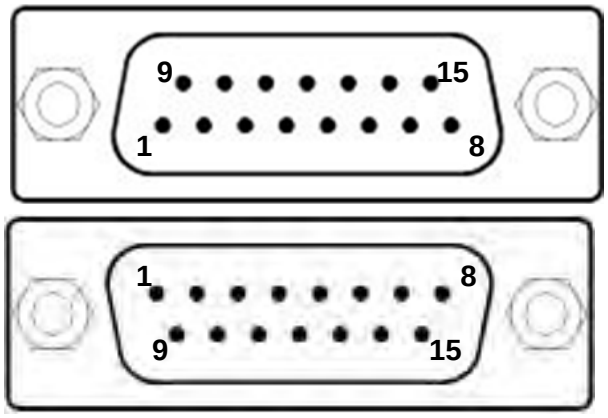
Pin	Function
1	Communications Buss - GND
2	Communications Buss – Tx
3	ASM Alarm Relay #3 – Closed when an alarm is present
4	ASM Alarm Relay #2 – Open when an alarm is present
5	ASM Alarm Relay #2 – Common
6	ASM Alarm Relay #4 – Closed when alarm is present
7	ASM Alarm Relay #1 – Open when an alarm is present
8	ASM Alarm Relay #1 – Common
9	Communications Buss – Rx
10	ASM Alarm Relay #3 – Open when an alarm is present
11	ASM Alarm Relay #3 – Common
12	ASM Alarm Relay #2 – Closed when an alarm is present
13	ASM Alarm Relay #4 – Open when an alarm is present
14	ASM Alarm Relay #4 – Common
15	ASM Alarm Relay #1 – Closed when an alarm is present

ASM Alarm/Comms connector (Sub D DB-15) pin-out Electrical Schematic:



CAM/SAM Comms connector (Sub D DB-15) pin-out:

The pin numbers on the DB15 (M) connector at the rear of the (optional) CAM/SAM are illustrated below.



Pinout of DB15 Connectors

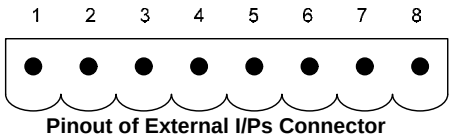
Pin Function Table:

Pin	Function
1	Communications Buss - GND
2	Communications Buss – Rx
3	Not connected
4	Not connected
5	Not connected
6	Not connected
7	Not connected
8	Not connected
9	Communications Buss – Tx
10	Not connected
11	Not connected
12	Not connected
13	Not connected
14	Not connected
15	Not connected

CAM/SAM External Inputs connector (Pheonix 8-pin) pin-out:

The pin numbers on the Pheonix 8-pin connector on the rear of the (optional) CAM/SAM are illustrated below.

To assist in logic level interfacing, an electrical schematic of the External Alarm Inputs pin-outs 8-pin polarized Pheonix connector located on the rear of the CAM/SAM is illustrated on the next page.



Pinout of External I/Ps Connector

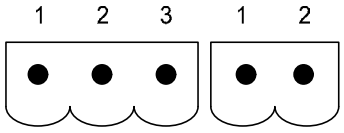
Pin Function Table:

Pin	CAM Function	SAM Function
1	External Alarm Input #1	Temperature / Digital / 0 to +5VDC
2	Ground	Ground
3	External Alarm Input #2	Digital / +5VDC to -60VDC / +60VDC to -60VDC
4	Ground	Ground
5	External Alarm Input #3	Digital / +5VDC to -60VDC / +60VDC to -60VDC
6	Ground	Ground
7	External Alarm Input #4	Digital / +5VDC to -60VDC / +60VDC to -60VDC
8	Ground	Ground

Note: When used as Digital Inputs, the External Inputs of the CAM/SAM are logic "0" = <+2.5VDC, "1" = >+2.5VDC, with a maximum DC input voltage of +60VDC

CAM/SAM Alarm Output and Digital Input connectors (Pheonix 2-pin & 3-pin) pin-outs:

The pin numbers on the Pheonix 3-pin and 2-pin connectors on the rear of the (optional) CAM/SAM are illustrated below. To assist in logic level interfacing, electrical schematics of the Alarm Output and the PTT Input polarized Pheonix connectors located on the rear of the CAM/SAM are illustrated on the next page.



Alarm Outputs PTT Inputs

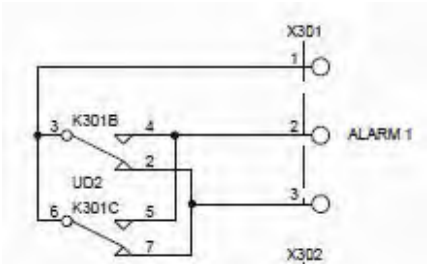
Note: Only one (1) channel of ten (10) is shown

Pin Function Table:

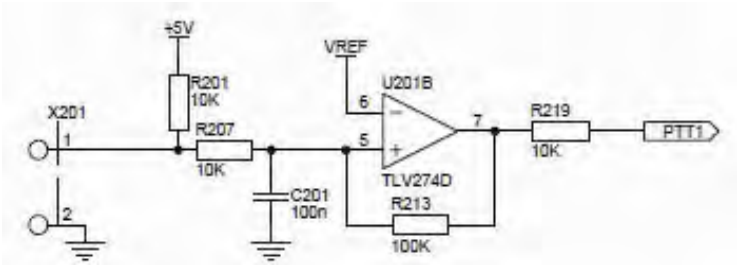
Pin	Function
1	Alarm Output Relay Common
2	Normally Open
3	Normally Closed
1	Digital Input
2	Ground

Note: The ten (10) PTT/Digital Inputs of the CAM/SAM are logic "0" = <+2.5VDC, "1" = >+2.5VDC, with a maximum DC input voltage of +5VDC

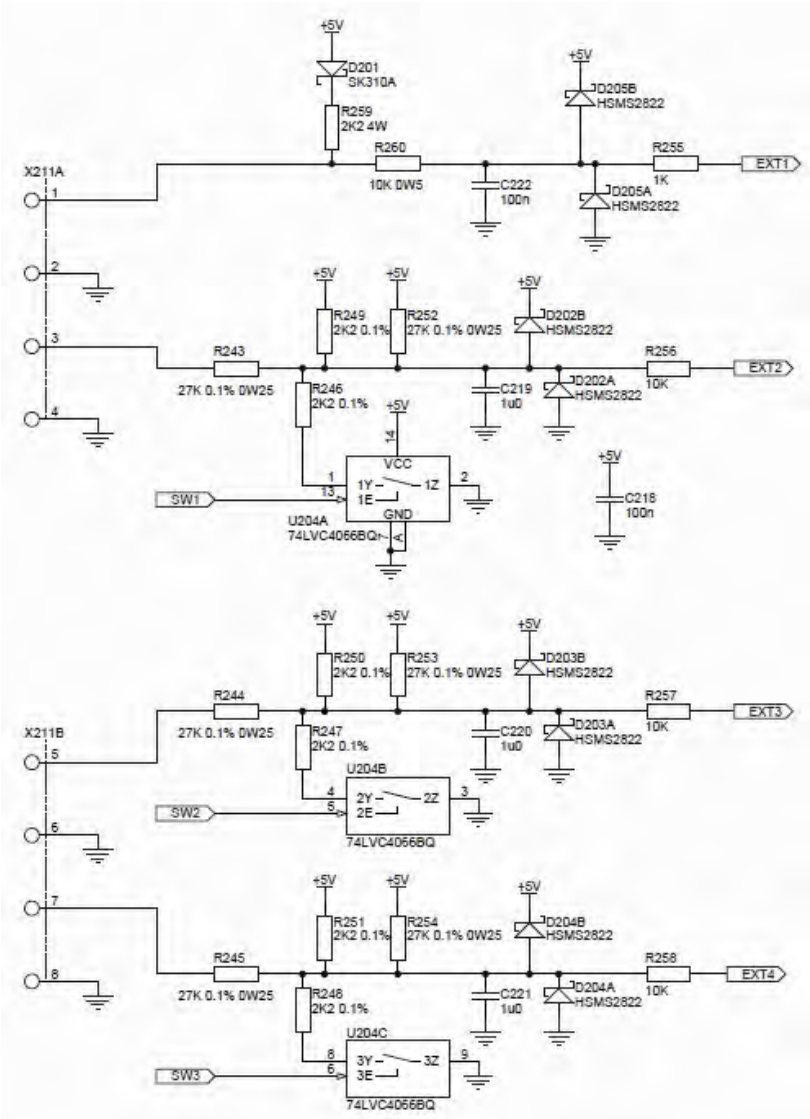
CAM/SAM Inputs and Outputs polarised Pheonix connectors' electrical schematics:



CAM/SAM Alarm Outputs



CAM External and CAM/SAM PTT Inputs



SAM External Inputs (Inp #1 at top, #2, #3 and #4 below)

12. Maintenance, Inspection and Repair Advice

No special maintenance program is required for the ASM, (optional) CAM/SAMs, or frequency banded couplers.

Firmware upgrades may periodically be made available and may be uploaded into the ASM (or optional CAM/SAMs) if desired.

Checking that the 7/16DIN (M) RF connectors on the feeder cables from the combiner and to the antenna are correctly torqued (as per manufacturers recommendations) onto the corresponding Coupler termination connectors is considered good practice. Checking all N Male termination connectors on the RF coaxial connectors on both the ASM and Coupler/s is also recommended.

All other DB15 and/or Pheonix connectors must be firmly located and pushed into their corresponding mating sockets, with fastening screws tightened securely.

Neither the ASM, optional CAM/SAMs, or the Coupler(s) are considered field repairable. Should it be considered that any unit may be faulty through diagnosis, it should be replaced or returned to RFI for repair.

13. Frequently Asked Questions (FAQ)

Q – Does the ASM really evaluate each frequency individually?
A – Yes. Each frequency is broken down individually and the Tx Forward Power, Tx VSWR and Receiver Level is displayed on a Status screen.

Q – Does the VSWR monitor function ignore nearby (12.5 KHz) off-frequency RF energy entering backwards from other transmitting antennas (i.e. horizontally mounted antennas)
A – Yes. The VSWR, like the Tx Forward Power, is measured in a channelised bandwidth. The high directivity of the ASM directional coupler prevents forward power from creating a Tx VSWR measurement error also.

Q – What is the minimum channel spacing to maintain true channelisation?
A – The ASM can discern and measure 12.5KHz channel separation between Tx channels.

Q – Channel bandwidth is established per channel during setup, and these could be mixed bandwidths (i.e. 25KHz Analogue, APCOP25 Phase1, TETRA, DMR, etc.) in a single combiner, and each can be measured individually?
A – Yes. Modulations and selected channel bandwidths can be mixed within a combiner with no issue as modulation type is programmed by channel in the GUI. Channel bandwidth is automatically selected by the modulation type chosen – except FM where several channel bandwidths are available.

Q – Are alarms logged for future reporting and analysis?
A – Yes. In firmware revision 1.92 and above, alarm events are stored in an Alarm Event Log which can be viewed and downloaded as desired.

Q – Can alarms be sent to remote devices?
A – Yes. Alarm events can be sent via SMTP (Email), SNMP (Northbound) traps, ASM relay outputs, or (optional) SAM/CAM relay outputs to remote devices for monitoring.

Q – How is the VSWR calibrated to the antenna?
A – The ASM accepts the cable loss of the tx feeder network and uses this to calculate the measured VSWR to the top of the Tx antenna.

Q – Will calibration take into account different lengths, types, and losses of the cable?
A – Yes. The coupling loss, cable loss, and any variable losses will be compensated out during calibration**.**

Q – What is the minimum forward power levels that can the monitored?
A – The ASM will measure down to -10 dBm and up to +60 dBm without any changes.

Q – Can a PC file be created and/or saved of the ASMs configuration?
A – Yes. A configuration file containing all of the ASM's parameters relevant to a site may be prepared beforehand and easily uploaded to an ASM (locally or remotely via Ethernet port), simplifying the deployment activities carried at a network site. This file is in easily editable text format for ease of use. In addition, multiple configuration files can be stored within the ASM and activated when desired to cater for network re-frequencying transitions, different network operating configurations, or to back up ASM configurations for site records, later use, or convenient programming in the event of an ASM unit being exchanged.

Q – Can the ASM monitor the site's Base Rx frequencies?
A – Yes. Rx Monitoring and Tx-Rx Antenna Isolation testing can be performed and results displayed.

14. Supporting Information

For additional support information on the ASM series products including;

ASM Product Brief
ASM Application Note
ASM User Manual
ASM Firmware File (*.FFP)
ASM SNMP MIB Files
CAM Product Brief
SAM Product Brief
SAM Temperature Sensor Product Brief

please visit the RFI website at:

http://www.rfiwireless.com.au/multicoupling-monitoring/monitoring.html

Test Drive the ASM GUI by visiting: **http://203.46.35.186**

Level 1:	Username:	user
	Password:	user
Level 2:	Username:	admin
	Password:	admin

Please note that this unit is not connected to a "live" network and may be test driven and programmed without impact. This unit may be off-line periodically for maintenance purposes or Internet connectivity outage. If you cannot connect to this unit please contact your nearest RFI Sales office so we can ensure it is available for your test drive.

Contact Information

If you would like more information on the ASM product and its applications, please contact your nearest RFI Sales Office.

For more information on RFI products, please visit us at **http://www.rfiwireless.com.au/**

15. User Notes:

RFI

rfi.com.au

1300 000 734